

KV-13VM20 / 20VM20

RM-Y126

SERVICE MANUAL

US Model

KV-13VM20

Chassis No. SCC-H16A-A

KV-20VM20

Chassis No. SCC-H16B-A

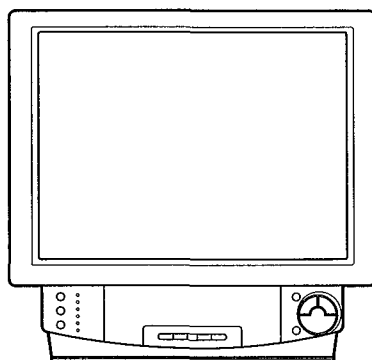
Canadian Model

KV-13VM20

Chassis No. SCC-H15B-A

KV-20VM20

Chassis No. SCC-H15C-A



MODELS OF THE SAME SERIES

KV-13VM20

KV-20VM20

SPECIFICATIONS

| | | | |
|---------------------------------|--|------------------------------|--|
| Television system | American TV standard, NTSC COLOR | Speaker Size | 6.6 x 4.1cm x 1 |
| Channel coverage | VHF: 2-13 UHF: 14-69 CABLE TV: 1-125 | Audio frequency response | 50Hz-20kHz |
| Picture tube | KV-13VM20 Microblack™ Trinitron® tube 13-inch picture measured diagonally 14-inch picture tube measured diagonally KV-20VM20 Trinitron® Tube 20-inch picture measured diagonally 21-inch picture tube measured diagonally | Power requirements | 120V AC, 60Hz |
| Antenna | 75Ω external antenna terminal for VHF/UHF F-TYPE | Power consumption | KV-13VM20: 85W(Standby mode 5 W) KV-20VM20: 100W(Standby mode 7 W) |
| Input | Video (phono jack): 1 Vp-p, 75-ohms unbalanced negative sync Audio (phono jack): 400 mVrms (100% modulation) Impedance: 47 kΩ, Monaural | Fast-forward and rewind time | Approx. 4min 30sec (T-120 Tape) |
| Output | Earphone Jack | Dimensions (w/h/d) | KV-13VM20: 15 ^{1/2} " x 16 ^{5/8} " x 15" 390 x 416 x 384 mm KV-20VM20: 20 ^{7/8} " x 20 ^{1/8} " x 19" 531 x 511 x 482 mm |
| Tape Speed | SP: 33.35mm/sec LP: 16.67mm/sec EP: 11.12mm/sec | Weight | KV-13VM20: Net: 14.65Kg (32. 3lbs) Gross: 16.65Kg (36.7lbs) KV-20VM20: Net: 28.3kg (62.4 lbs) Gross: 30Kg (66.1 lbs) |
| Maximum Recording/playback time | 9 hours in EP mode | Supplied accessories | Remote Commander RM-Y126 (1) with 1 AA size (R6) battery Antenna Adapter (1) |
| Speaker output | 6.5W x 1 | | |

Design and specifications are subject to change without notice.



TRINITRON® COLOR VIDEO TV

SONY®

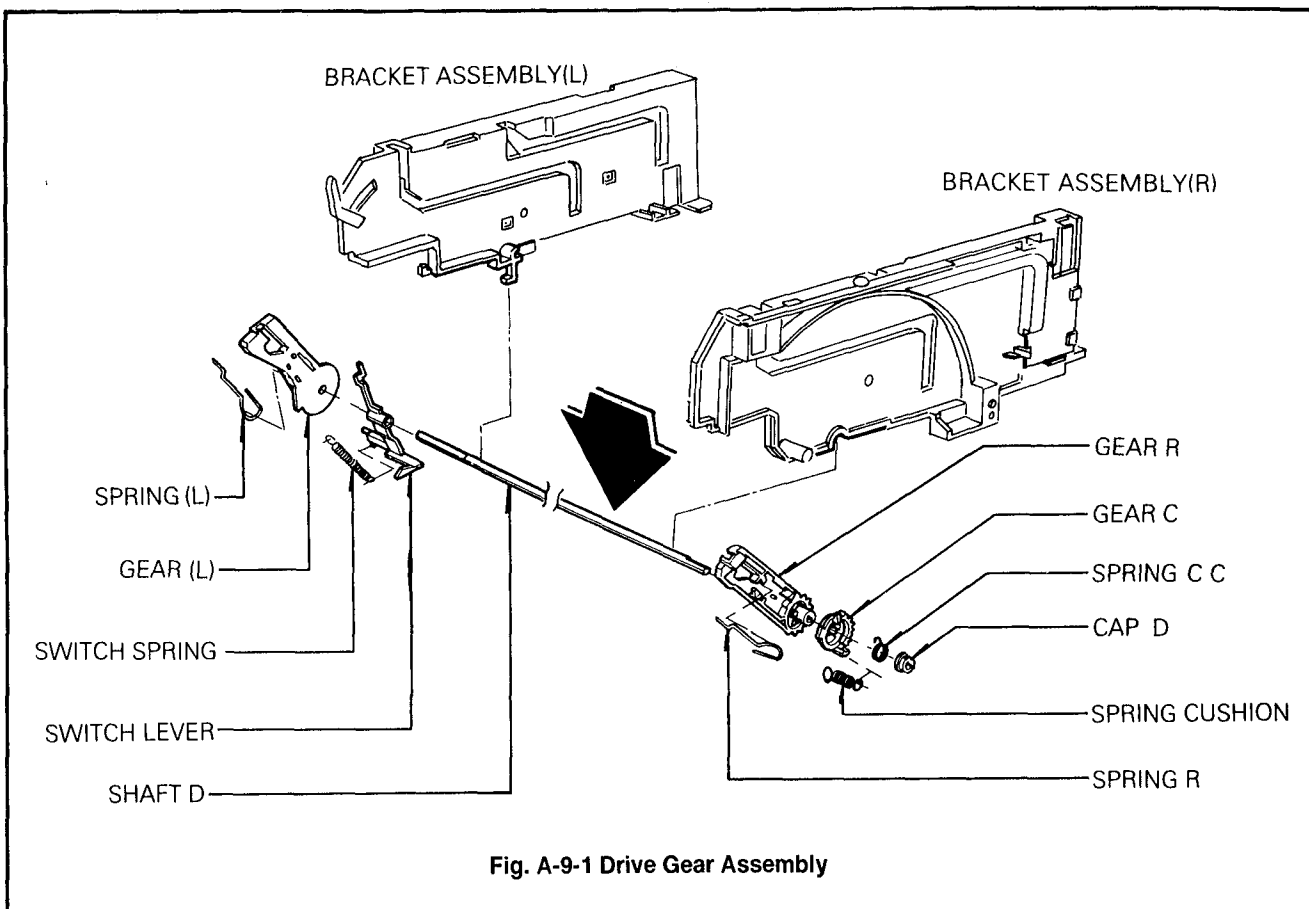


Fig. A-9-1 Drive Gear Assembly

*** NOTE**

- 1) When reassembling, seat the projections of Gear R in the holes of Gear C when the projection of Gear R is aligned with the hole of Gear C and then keep the Gear C turned in the clockwise direction

9-6. Gear R(Fig. A-9-1)

- 1) Lift up the Gear R from the Shaft

9-7. Spring R(Fig. A-9-2)

- 1) Remove the Spring R by releasing Hooks.

*** NOTE**

- 1) When reassembling, be certain Spring R in the part(A) of Gear R

9-8. Gear L(Fig. A-9-1)

- 1) Remove the Gear L from the shaft

9-9. Spring L (Fig. A-9-2)

- 1) Remove the Spring L by releasing Hooks from the Gear L

*** NOTE:**(Refer to the Spring R Section)

9-10. Switch Lever(Fig. A-9-1)

- 1) Remove the Switch Lever from the shaft

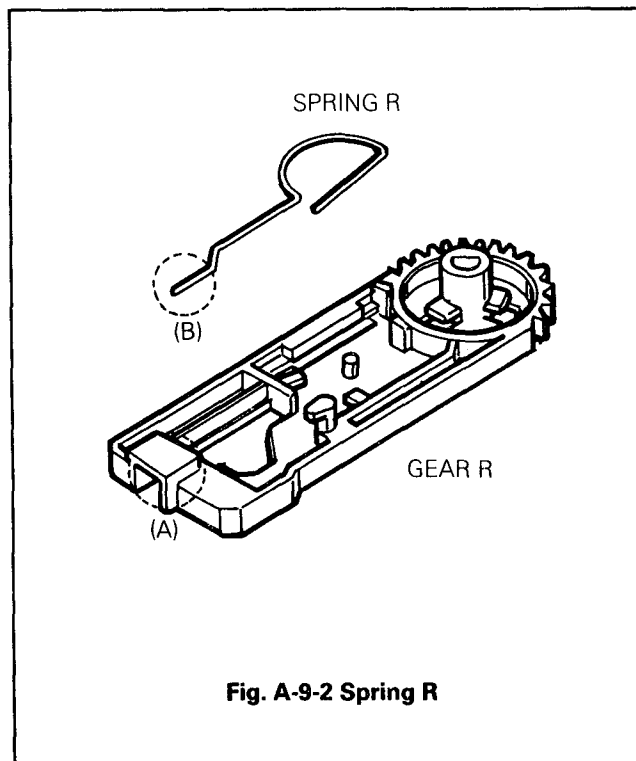
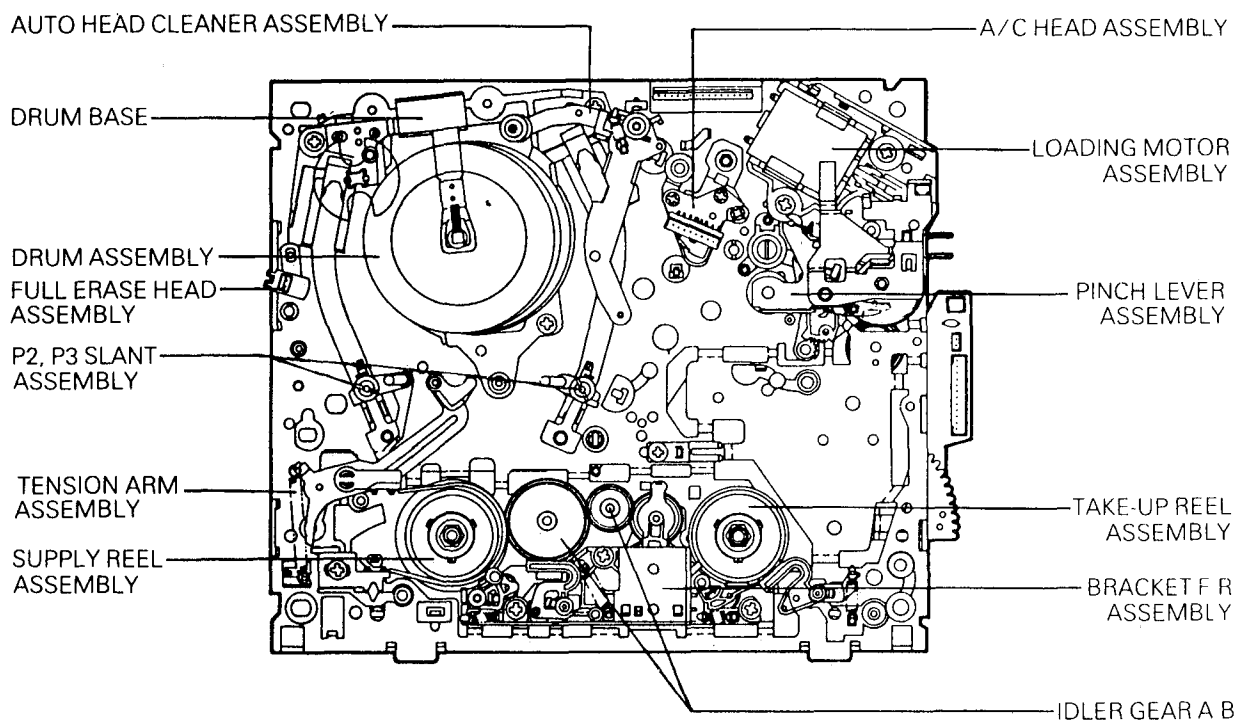


Fig. A-9-2 Spring R

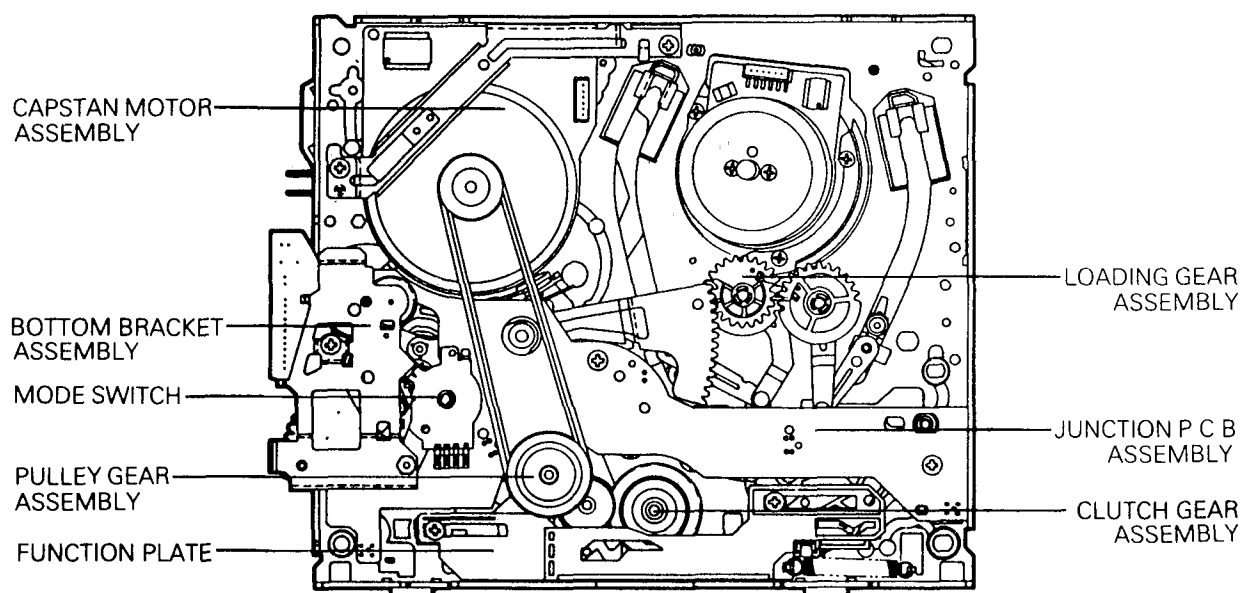
9-2. DECK MECHANISM

• Deck Mechanism Parts Location

Top Side



Bottom Side



1. Auto Head Cleaner Assembly (Fig. B-1) (Optional Item)

- 1) Remove the Cleaner Arm Assembly (Auto Head Cleaner Assembly) by pushing the Locking Tab (B) outward
- 2) Remove the Cleaner Upper Spring and then remove the Cleaner Upper Arm Sub Assembly
- 3) Remove the Cleaner Spring

* NOTE

- 1) When reassembling, do not touch the Video Head Tip with fingers or tools

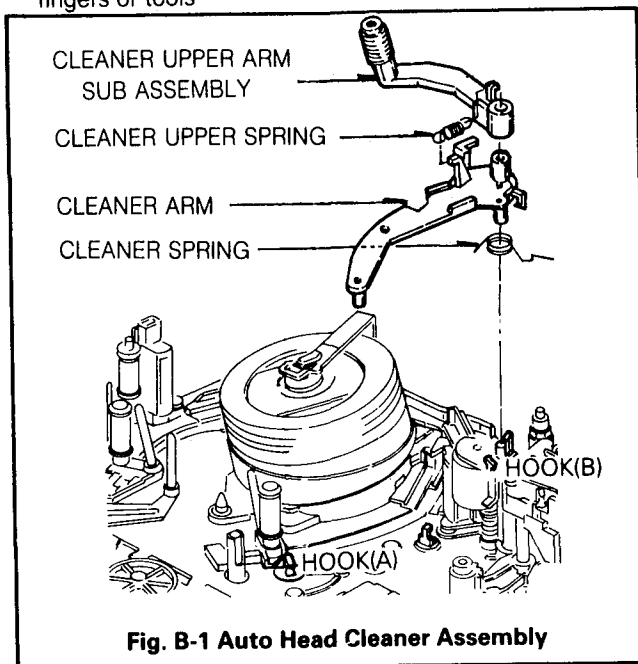


Fig. B-1 Auto Head Cleaner Assembly

2. Drum Assembly and Drum Base(Fig. B-2)

- 1) Remove the Auto Head Cleaner Assembly (Option)
- 2) Unplug the connector with the Deck Mechanism Assembly turned over
- 3) Loosen the screw(A) and then lift up the Drum Brush
- 4) Remove two screws(B) and then lift up the Drum Assembly and Drum Base from the Deck Mechanism Assembly
- 5) Separate the Drum Assembly from the Drum Base by Loosening three screws(C) on the back of Drum Base.

* NOTE

- 1) When disassembling and reassembling
 - ① Do not touch the Video Head tip with fingers or tools (Give special attention to disassembling and reassembling of Auto Head Cleaner Assembly)
 - ② After reinstalling the Drum Brush, the Drum Brush should be aligned with the center of vertical axis of Drum Assembly
 - ③ After completing the reassembly, adjust the transportation system and the Servo P G

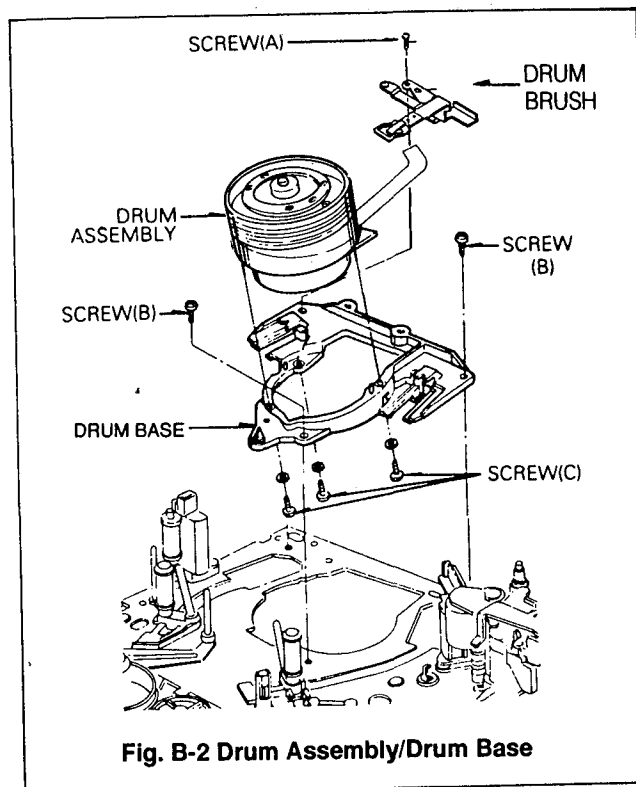


Fig. B-2 Drum Assembly/Drum Base

3. Drum Assembly

3-1. Drum Sub and Motor Assembly (Fig. B-3-1) : New Type (No two screws and P.C.B on the Drum)

- 1) Remove the Drum Base from the Deck Mechanism Assembly.
- 2) Separate the Drum Assembly from the Drum Base
- 3) Remove two screws(A) and then remove the rotor
- 4) Remove three screws(B) and then remove the stator

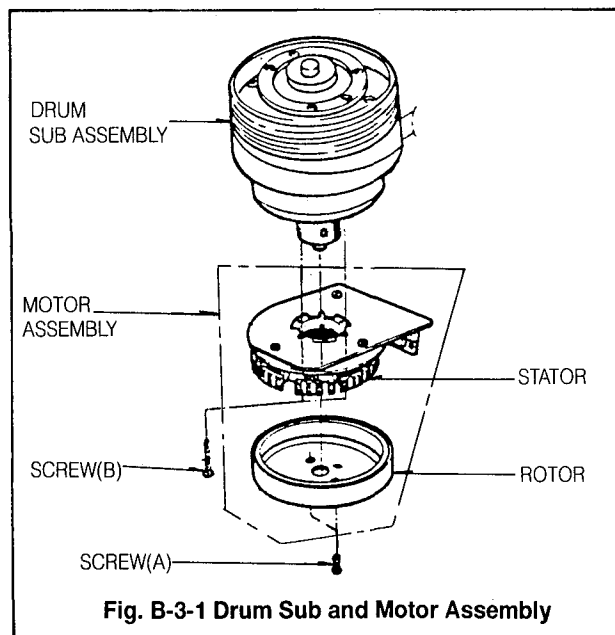


Fig. B-3-1 Drum Sub and Motor Assembly

* NOTE

- 1) When disassembling and reassembling
 - ① Do not touch the Video Head Tip with fingers or tools.

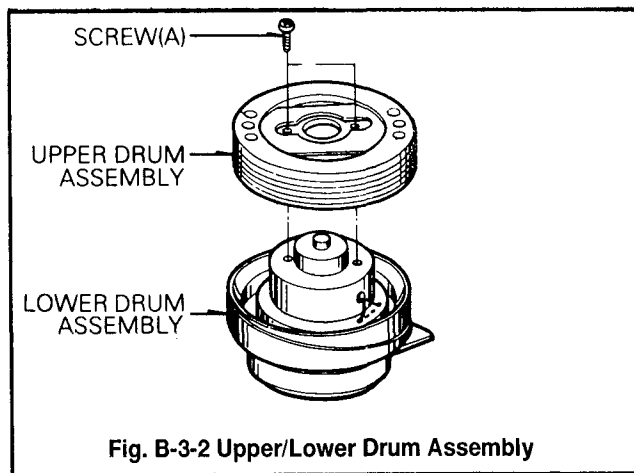
3-2. Upper and Lower Drum Assembly (Fig. B-3-2)

: Old Type (There are two screws and P.C.B on the Drum)

- 1) Remove the Drum Assembly and Drum Base from the Deck Mechanism Assembly
- 2) Separate the Drum Assembly from the Drum Base.
- 3) Remove two screws(A)
- 4) Remove the P C B
- 5) Separate the upper Drum Assembly from the Lower Drum Assembly.

*** NOTE**

- 1) When disassembling and reassembling
- ① Do not touch the Video Head Tip with fingers or tools
- ② Make sure that the color(white) marked on the P.C.B of the upper Drum should coincide with the color(Green) marked on the Flange Assembly.

**Fig. B-3-2 Upper/Lower Drum Assembly****4. A/C(Audio/Control) Head Assembly (Fig.B-4)**

- 1) Unplug the connector
- 2) Remove the Nut(A), and then lift up the A/C Head Assembly
- 3) Remove the Azimuth Adjusting Screw
- 4) Remove two screws(B),(D) and then separate the A/C Head Assembly from the Base A/C Head Assembly.

*** NOTE**

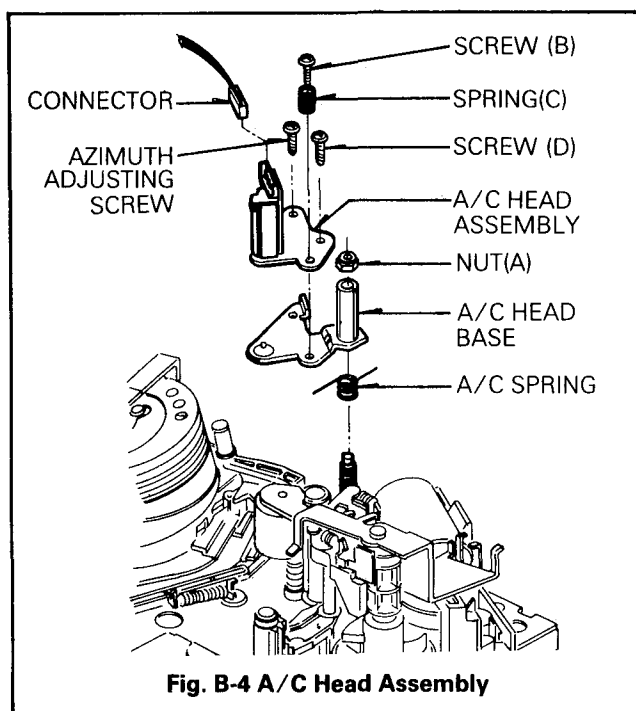
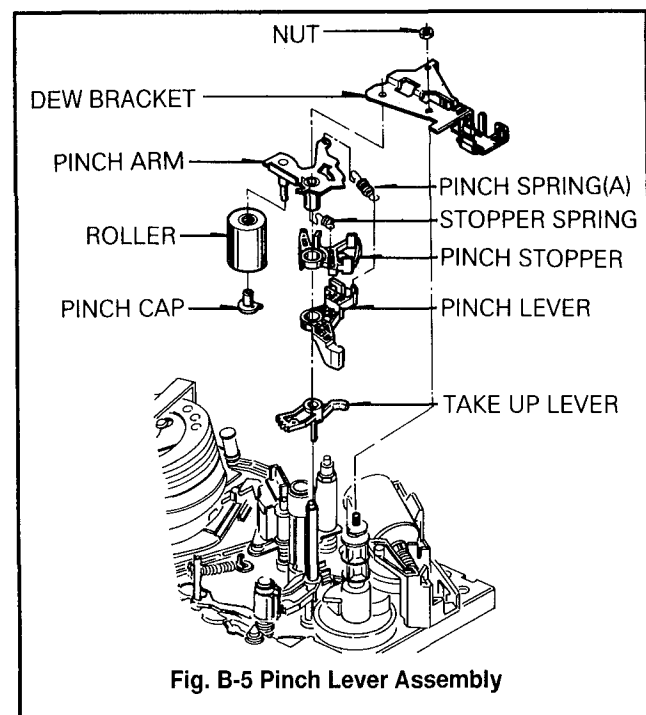
- 1) When disassembling
- ① First of all, release the spring A/C.
- ② Do not touch the A/C Head Tip with fingers or tools
- ③ After reinstalling the Audio Control Head Assembly, adjust the Tilt, Azimuth and Height of A/C Head

5. Pinch Lever Assembly(Fig. B-5)

- 1) Remove one Nut, and then remove the Dew Bracket
- 2) Lift up Pinch Lever Assembly.
- 3) Remove the Pinch Spring, and remove the Pinch Lever
- 4) Remove the Stopper Spring and remove the Pinch Stopper by lifting it up when the Hook of Pinch Stopper is aligned with the hole of Pinch Arm while rotating the Pinch Stopper in the counterclockwise direction.
- 5) Remove the Pinch Cap, and then remove the Pinch Roller Assembly

*** NOTE**

- 1) When disassembling and reassembling
- ① Be careful not to get any foreign substance on the Roller
- ② When disassembling the Pinch Cap, be careful not to damage the Pinch Arm

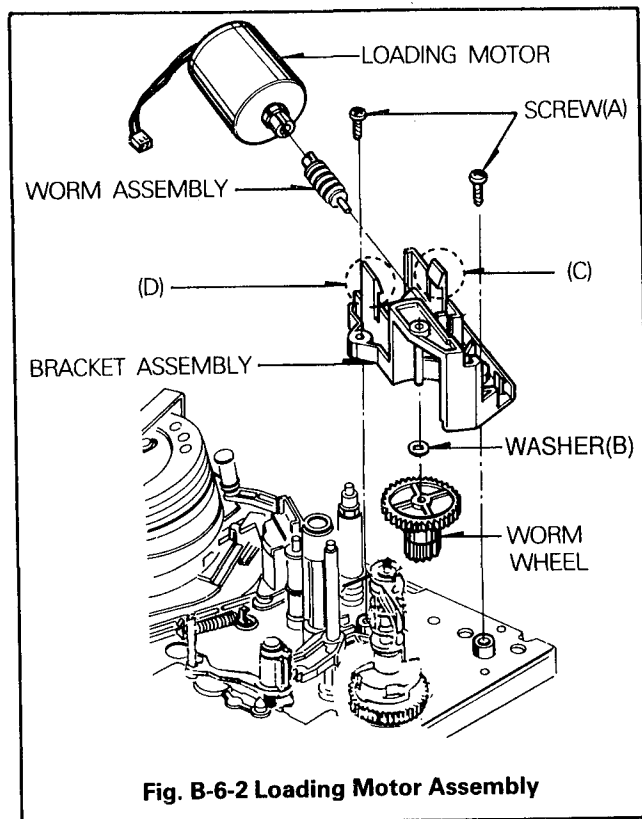
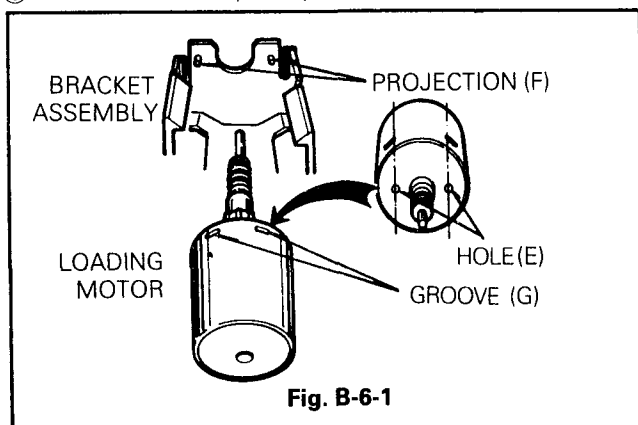
**Fig. B-4 A/C Head Assembly****Fig. B-5 Pinch Lever Assembly**

6. Loading Motor Assembly(Fig. B-6-1, B-6-2)

- 1) Remove the Dew Bracket.
- 2) Unplug the connector from the Junction P C B Assembly
- 3) Remove two screws(A)
- 4) Remove the worm wheel by pushing it down
- 5) Remove the Loading Motor Assembly by pushing(C) and (D) outward
- 6) Remove the worm Gear Assembly from the Loading Motor Assembly by pushing it

* NOTE

- 1) When reassembling
 - ① Make sure that the worm assembly is seated in the axis of Loading Motor
 - ② Two grooves(G) of Loading Motor should be turned up and two projections(F) of Bracket Assembly should be seated in each at the two holes(E)(Fig B-6-1)
 - ③ Take notice of the polarity of the Loading Motor

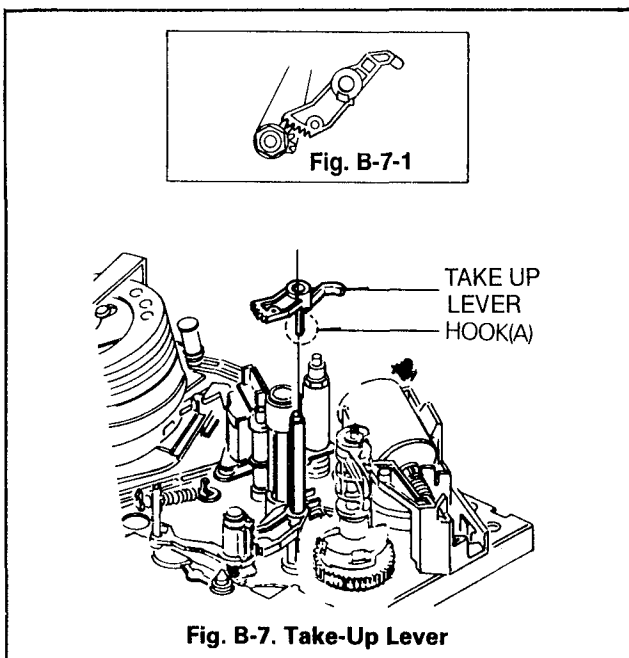


7. Take Up Lever(Fig. B-7)

- 1) Remove the Loading Motor Assembly.
- 2) Remove the Dew Bracket(Fig. B-5).
- 3) Remove the Pinch Lever Assembly(Fig. B-5).
- 4) Keep the Pinch Gear turned in the clockwise direction (180°).
- 5) Remove the Take-Up Lever by pushing the hook(A) outward.

* NOTE

- 1) When disassembling and reassembling
 - ① When disassembling the Take-Up Lever, be careful not to break the Hook(A).
 - ② When reassemble the Take-Up Lever, align the appendant Gear of Lever Take-Up with the appendant Gear of Take-up Arm
 - ③ Reassemble the Take-Up Lever completely by hooking (A)
 - ④ Be sure to replace together Take-Up Lever and Pinch Gear.
 - ⑤ Be sure to assemble Pinch Lever Assembly before operating.



8. Take Up Arm Assembly(Fig. B-8)

- 1) Remove the Loading Motor Assembly.
- 2) Remove the Dew Bracket, Pinch Gear, and the Take-Up Lever.
- 3) Remove one Washer(A).
- 4) Remove the Take-Up Arm Assembly by lifting it up.
- 5) Remove the spring(B).

* NOTE

- 1) When reassembling
 - ① Align the Gear of Take-Up Arm with the Gear of Take-Up Lever(Fig. B-7-1).

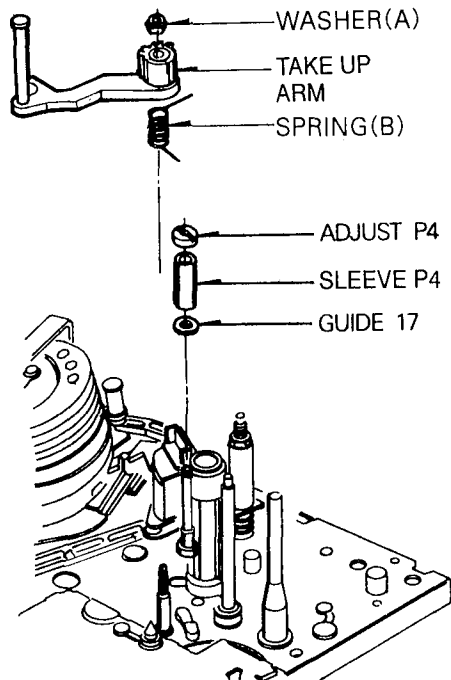


Fig. B-8 Take-Up Arm Assembly/P4

9. P4 Assembly(Fig. B-8)

- 1) Remove the Adjust P4
- 2) Remove the Sleeve P4.
- 3) Remove the Guide 17

10. Pinch Gear(Fig. B-10-1, B-10-2)

- 1) Remove the Loading Motor Assembly.
- 2) Remove one Nut(A) and then remove the Dew Bracket (Fig. B-5).
- 3) Remove the Pinch Lever Assembly by lifting it up(Fig. B-5)
- 4) Keep the Pinch Gear turned in the clockwise direction (180°).
- 5) Remove the Take-Up Lever by pushing the hook(A) outward(Fig. B-7).
- 6) Keep the Pinch Gear turned in the counterclockwise direction (180°).
- 7) Remove the Pinch Gear Assembly.

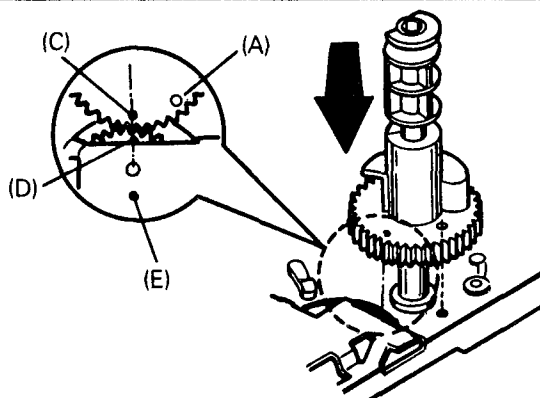


Fig. B-10-2 Pinch Gear

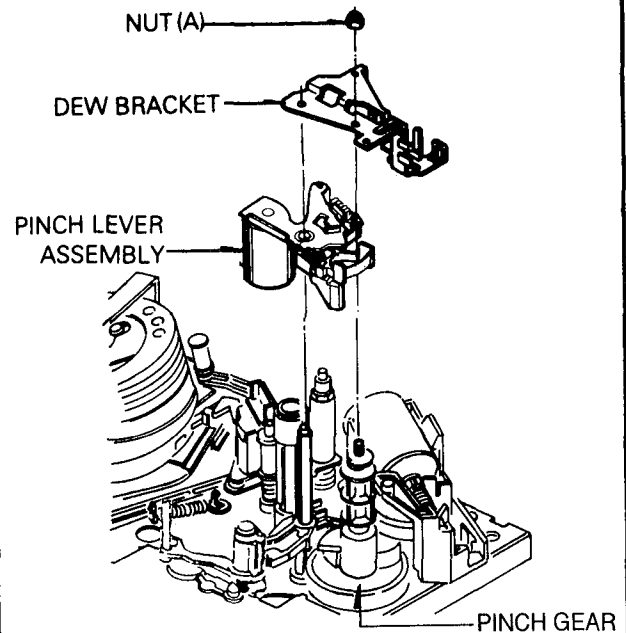


Fig. B-10-1 Pinch Gear Assembly

*** NOTE**

- 1) When reassembling, align the hole(A) of Pinch Gear with the hole of chassis, and the hole(C) of Pinch Gear with the groove(D) of the P.C.Gear. Hole(E) of chassis should be aligned with the hole of P.C Gear.
- 2) Be sure to replace together Take-Up Lever and Pinch Gear.
- 3) Be sure to assemble Pinch Lever Assembly before operating.

11. FE(Full Erase) Head Assembly(Fig. B-11) (Optional Item)

- 1) Unplug the connector.
- 2) Remove one screw(A), and then remove the FE Head

*** NOTE**

- 1) When disassembling and reassembling
- ① Do not touch the Video Head Tip with fingers or tools

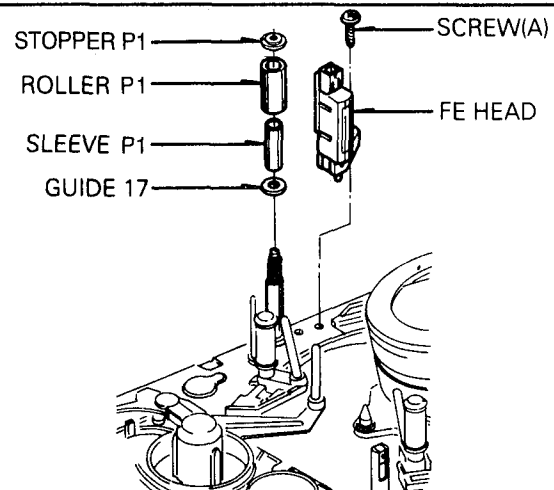


Fig. B-11 FE Head/P1

12. P1 Assembly(Fig. B-11)

- 1) Remove the Stopper P1.
- 2) Remove the Roller P1 .
- 3) Remove the Sleeve P1.
- 4) Remove the Guide 17.

13. Tension Arm Assembly(Fig. B-13)

- 1) Remove one screw(C).
- 2) Remove the Tension Spring
- 3) Remove the Tension Arm Assembly by pushing hooks outward with the Deck Mechanism Assembly turned over.
- 4) Remove the Tension Band Assembly from the Tension Arm by pushing Hooks of Holder(A)

• NOTE

- 1) When disassembling and reassembling, give special attention to the disassembling and reassembling of Tension Arm Assembly, because the Tension Band is interposed between the Supply Reel and the Soft Brake

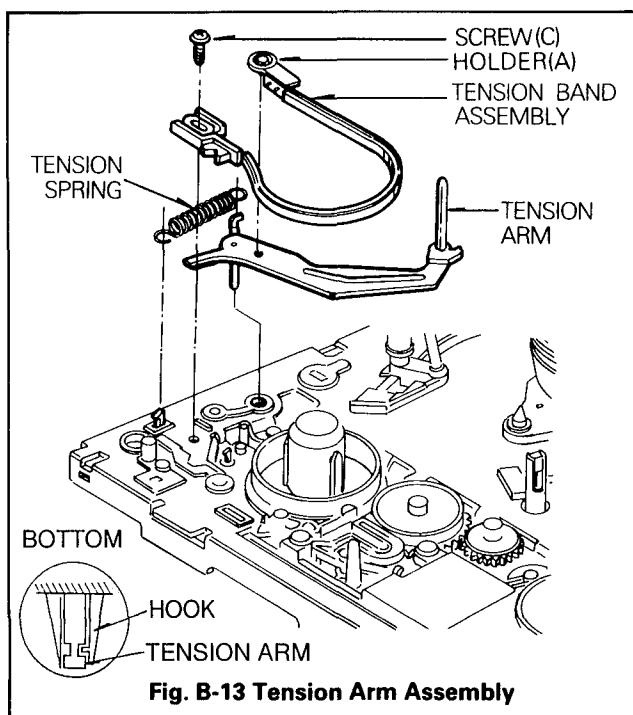


Fig. B-13 Tension Arm Assembly

14. Supply Soft/Supply Main/Take-Up Soft /Take-Up Main Brake Assembly

- 1) Supply Soft Brake(SSB)
 - ① Remove the SSB Spring
 - ② Remove the SSB
- 2) Supply Main Brake(SMB)
 - ① Remove the SMB Spring
 - ② Remove the SMB
- 3) Take Up Soft Brake(TSB)
 - ① Remove the TSB Spring.
 - ② Remove the TSB.
- 4) Take-Up Main Brake(TMB)
 - ① Remove the TMB Spring.
 - ② Remove the TMB

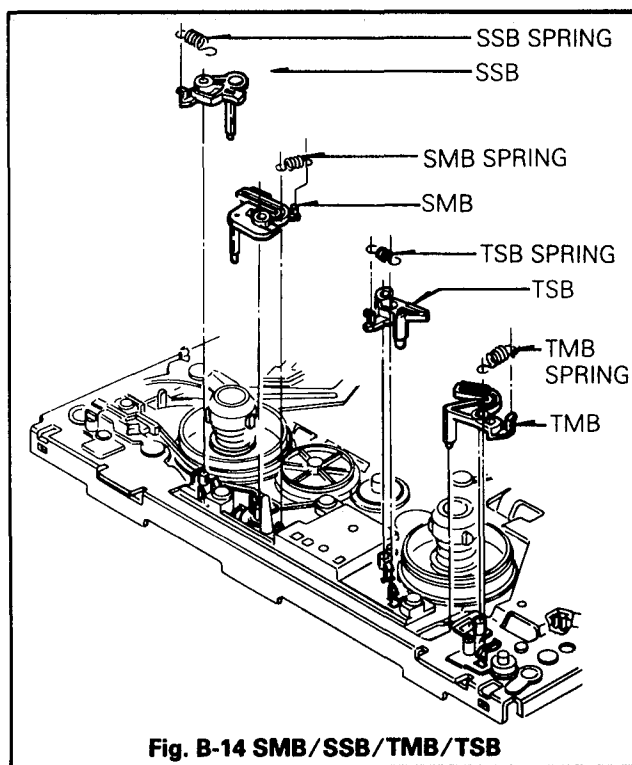


Fig. B-14 SMB/SSB/TMB/TSB

15. Bracket F/R(FF/Rewind) Assembly (Fig. B-15)

- 1) Remove the TMB.
- 2) Remove the Washer(A), and then remove the Gear F.R.
- 3) Remove three screws, and then remove Bracket F/R Assembly from the Deck Mechanism Assembly.
- 4) Remove the Washer(B), and spring Up/D, and then remove the Gear Up/D.
- 5) Remove the shaft(C), and then remove the Arm F.R, Lever F.R and Spring F.R.

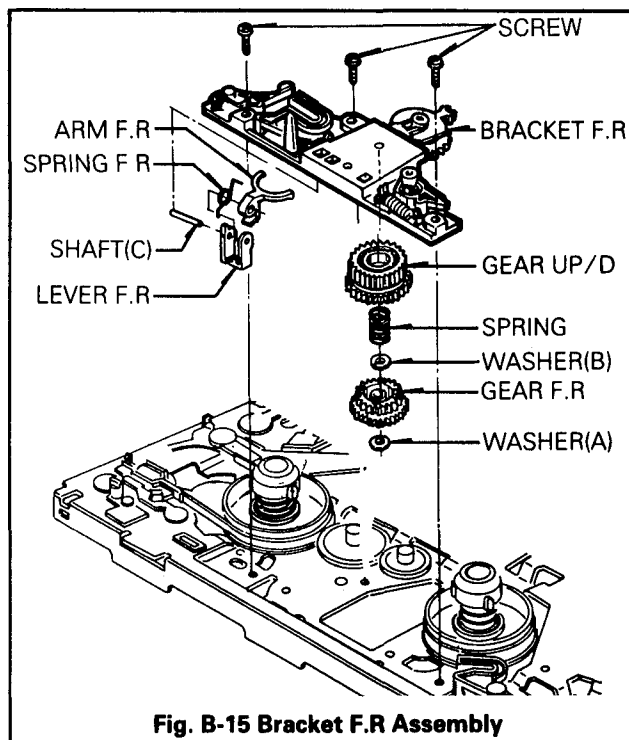


Fig. B-15 Bracket F.R Assembly

16. Supply Reel Assembly(Fig. B-16)

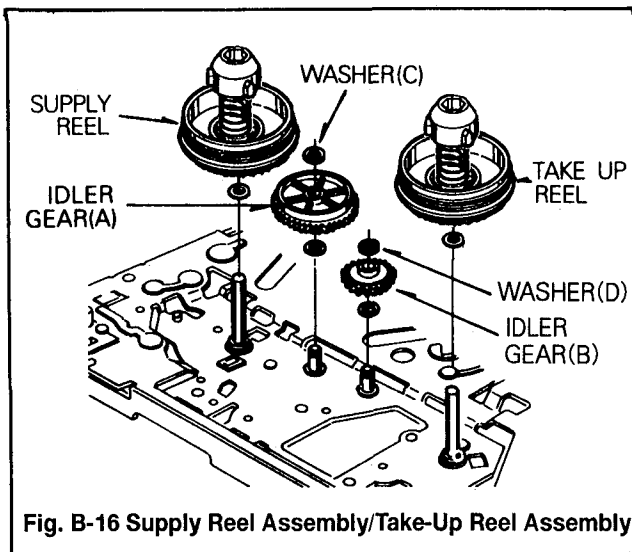
- 1) Remove the Tension Band Assembly
- 2) Remove the Bracket F/R.
- 3) Lift up the Supply Reel Assembly from the Deck Mechanism Assembly.

17. Take Up Reel Assembly(Fig. B-16)

- 1) Remove the TMB(Fig. B-14)
- 2) Lift up the Take-up Reel Assembly from the Deck Mechanism Assembly

*** NOTE**

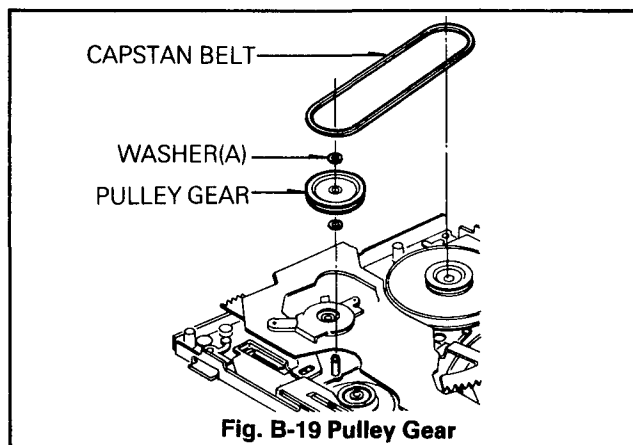
- 1) When reassembling
- ① Make sure that the Supply and Take Up Reel are not exchanged.
- ② After reinstalling the Supply Reel Assembly, Adjust the Tension.

**18. Idler Gear(A), (B)(Fig. B-16)**

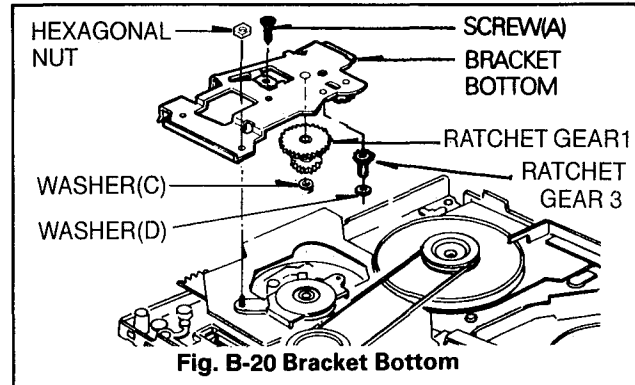
- 1) After removing the Supply Reel and supply Main Brake Assembly, remove the washer(C) and then remove the Idler Gear(A).
- 2) Remove the Washer(D) and remove the Idler Gear(B)

19. Pulley Gear Assembly(Fig. B-19)

- 1) Turn over the Deck Mechanism Assembly
- 2) Remove the Capstan Belt
- 3) Remove the Washer(A) and lift up the Pulley Gear

**20. Bracket Bottom Assembly(Fig. B-20)**

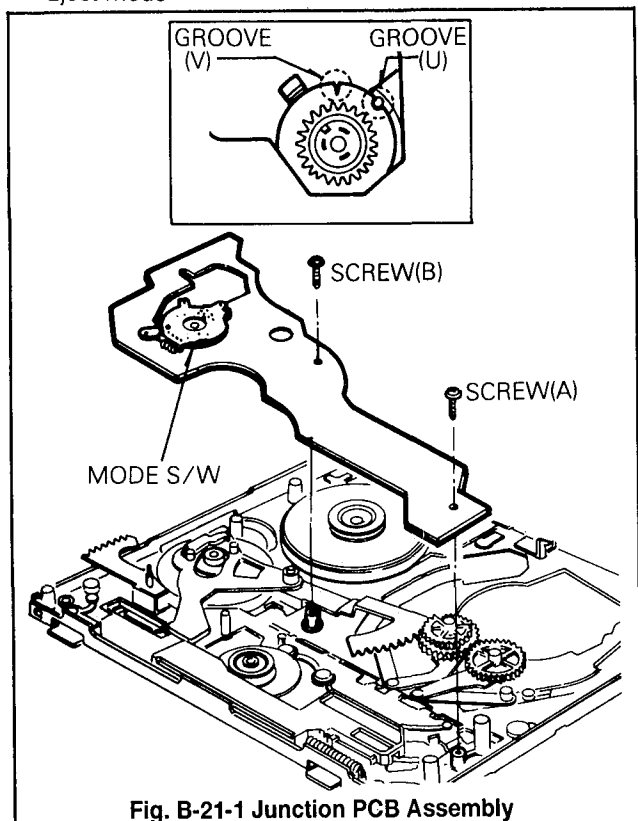
- 1) Remove one screw(A).
- 2) Remove one Hexagonal Nut, and then lift up the Bracket Bottom Assembly.
- 3) Remove one Washer(C), and lift up the Ratchet Gear 1.
- 4) Remove the washer(D), and then remove Ratchet Gear 3 from the Bracket Bottom.

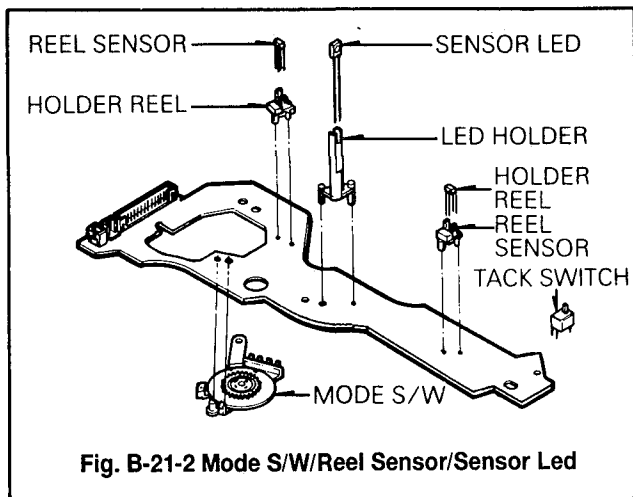
**21. Junction PCB(Printed Circuit Board) Assembly(Fig. B-21-1)**

- 1) Remove the Bracket Bottom Assembly.
- 2) Remove two screws(A), (B) and then remove the Junction P.C.B Assembly.
- 3) Remove the Mode Switch from the Junction P.C.B Assembly
- 4) Remove the Reel Sensor, Sensor LEDS and each holder from the Junction P.C.B(Fig. B-21-2).

*** NOTE**

- 1) When reassembling the Mode Switch, the groove(V) and (U) of Mode Switch should be at their original place in the Eject Mode



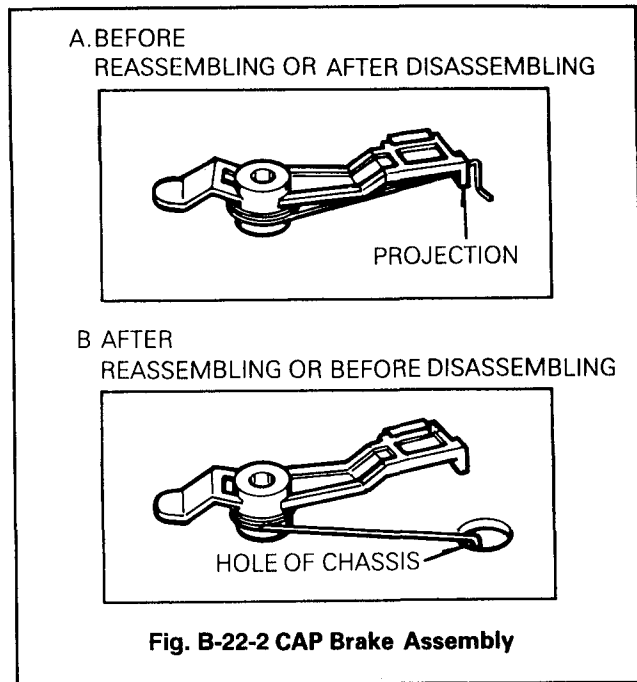
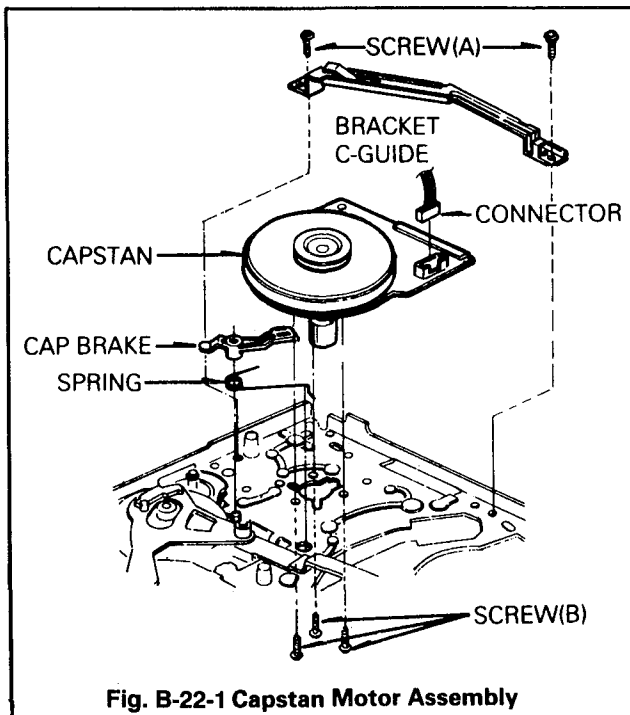


22. Capstan Motor and Brake Assembly (Fig. B-22-1)

- 1) Remove the Junction P C B Assembly
- 2) Hook the end of Capstan Brake Spring to the projection of Capstan Brake and then remove the Capstan Brake Assembly by lifting it up (Fig B-22-2).
- 3) Remove two Screws(A), and then remove the Bracket C-Guide
- 4) Remove the Connector
- 5) Remove three screws(B), and then remove the Capstan Motor Assembly from the Deck Mechanism Assembly

* NOTE

- 1) When disassembling and reassembling, hook end of the spring on the projection of Cap-Brake and remove it by lifting it up. Reassemble it in the opposite manner

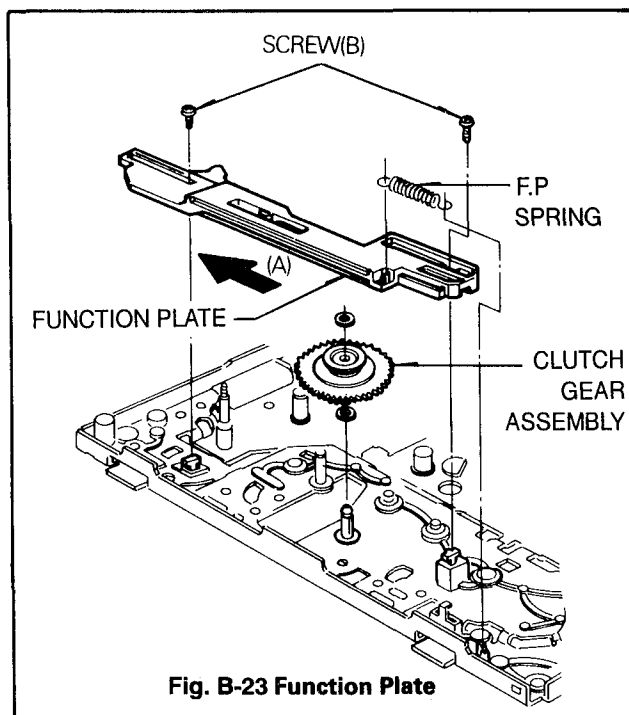


23. Function Plate (Fig. B-23)

- 1) Remove two screws(B) in Eject Mode.
- 2) Remove the Function Plate Spring
- 3) Push the Function Plate in the direction of arrow(A) and then lift it up.

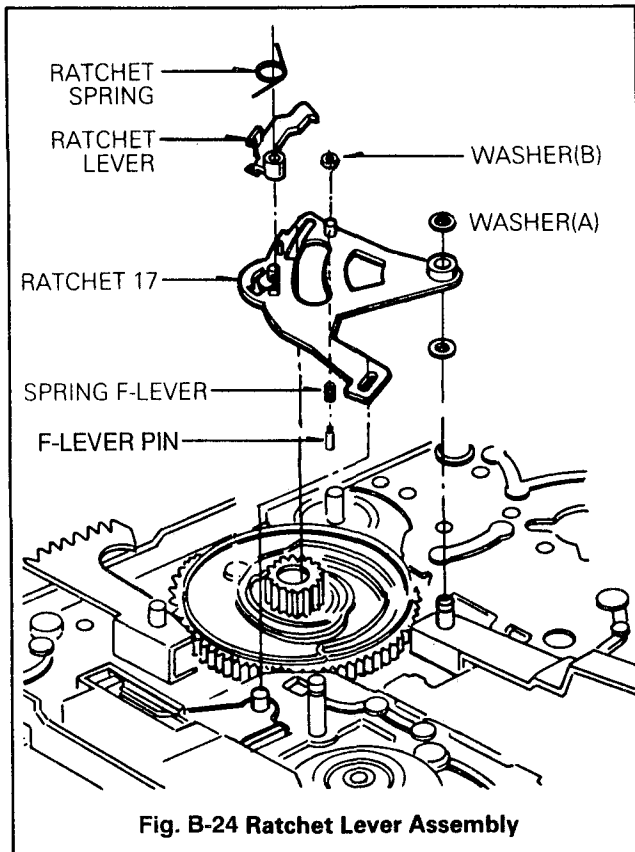
* NOTE

- 1) When reassembling, the groove of Lower part of Function Plate should be aligned with the shaft of Tension Lever Assembly (Fig. B-29)



24. Ratchet Lever Assembly(Fig. B-24)

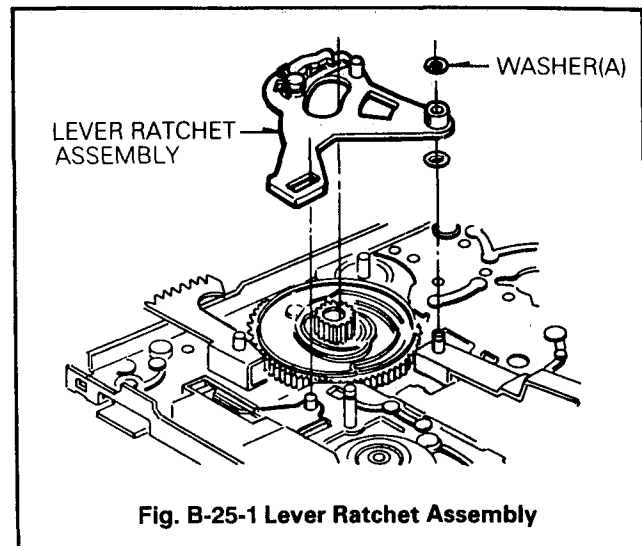
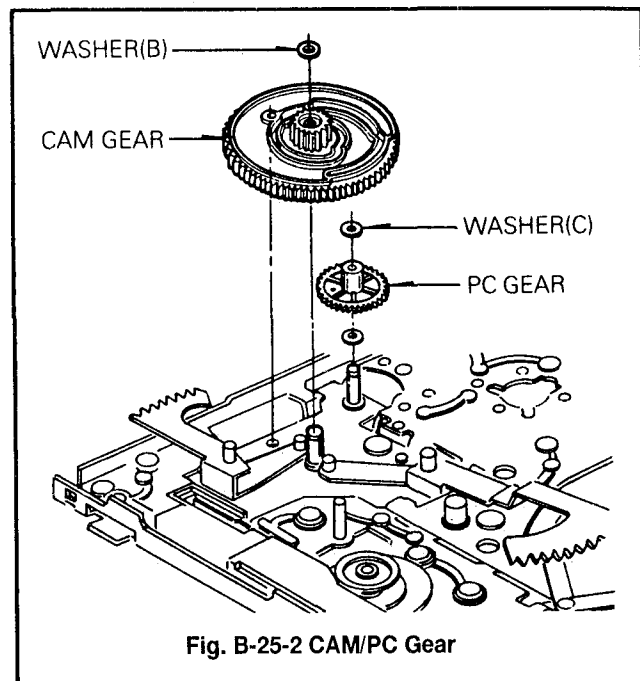
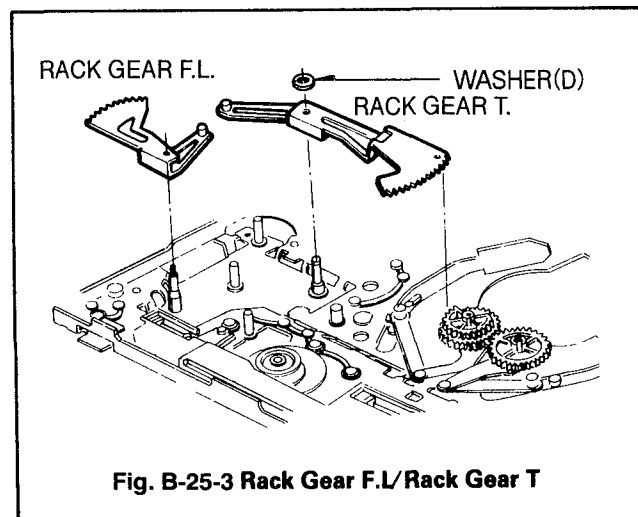
- 1) Remove the Function Plate
- 2) Remove the Junction P C B Assembly
- 3) Remove the Washer(A) and then remove the Ratchet Lever Assembly.
- 4) Remove the Ratchet Spring
- 5) Remove the Ratchet Lever from the Ratchet 17 by lifting it up when the hook of it is aligned with the hole of Ratchet 17 while rotating it counterclockwise direction
- 6) Remove the Washer(B), and turn over the Ratchet 17 and then remove the F-Lever Pin, Spring F-Lever.

**Fig. B-24 Ratchet Lever Assembly****25. Cam Gear/Rack Gear T/Rack Gear FL(Fig. B-25-2)**

- 1) Remove the washer(A) and remove the Ratchet Lever Assembly (Fig B-25-1)
- 2) Remove the washer(B), and then remove the Cam Gear (Fig B-25-2)
- 3) Remove the Rack Gear F L (Fig B-25-3)
- 4) Remove the Washer(D).(Fig. B-25-3).
- 5) Remove the Rack Gear T.(Fig. B-25-3).

*** NOTE**

- 1) When reassembling
 - ① Align the Projection of Rack Gear T with the hole of Loading Gear
 - ② Drive the Rack Gear F.L in the direction of arrow(D)
 - ③ Hole of Cam should be aligned with the hole of chassis, and the groove(■) of Cam Gear should be aligned with the hole of PC Gear (Fig B-26)

**Fig. B-25-1 Lever Ratchet Assembly****Fig. B-25-2 CAM/PC Gear****Fig. B-25-3 Rack Gear F.L/Rack Gear T**

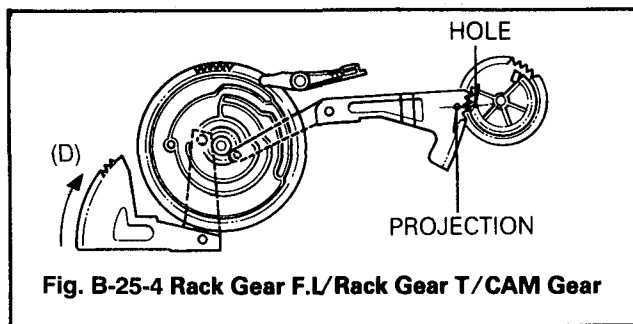


Fig. B-25-4 Rack Gear F.L/Rack Gear T/CAM Gear

26. PC Gear(Fig. B-26)

- 1) Remove the washer(C).
- 2) Remove the P C Gear by lifting it up.

* NOTE

- 1) When reassembling
 - ① The Groove of PC Gear should be aligned with the groove(V) of Cam Gear, and another hole of it should be aligned with the hole of chassis(Fig B-26)

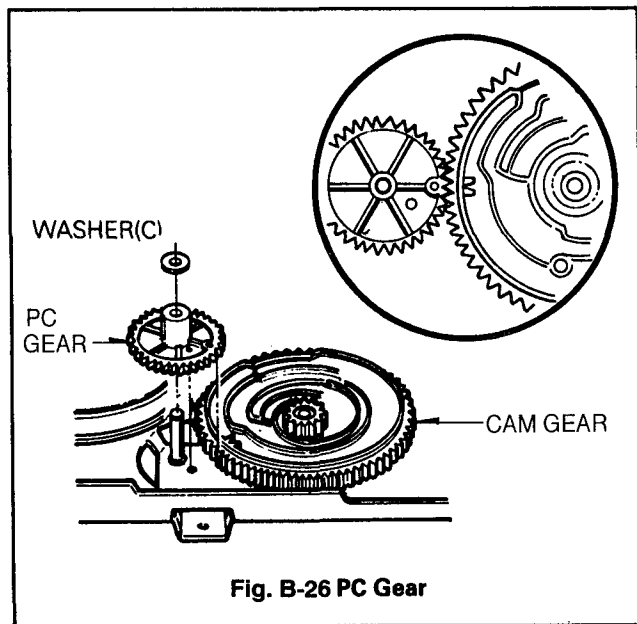


Fig. B-26 PC Gear

27. P2 and P3 Slant Assembly(Fig. B-27)

- 1) After finishing the disassembly of Drum Assembly, remove the P2 and P3 Slant Assembly by turning the Loading Gear(R) in the clockwise direction (Loading direction)
- 2) Loosen the set screws
- 3) Remove the Roller Guide from the Slant Base.

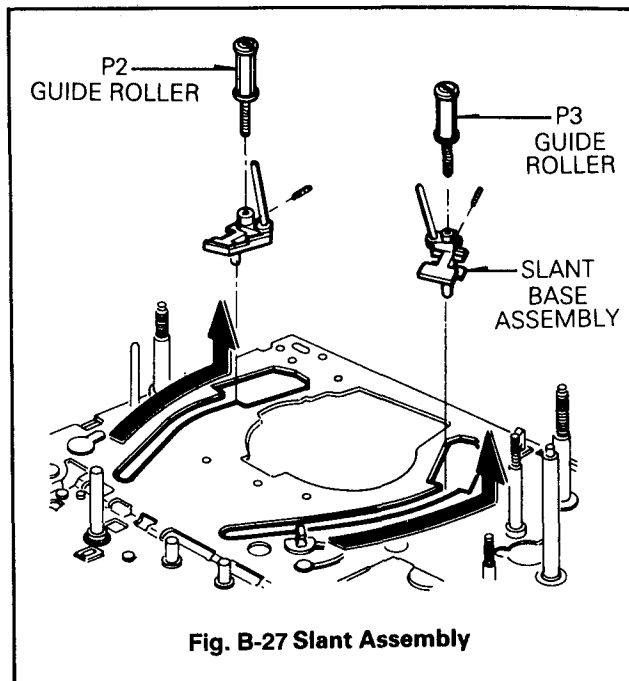


Fig. B-27 Slant Assembly

* NOTE

- 1) When disassembling and reassembling
 - ① Use a Hexagonal wrench to remove set screw.
 - ② Take notice that the P2 and P3 Slant Assembly should not be changed from their original place.

28. Loading Gear Assembly(L),(R)(Fig. B-28)

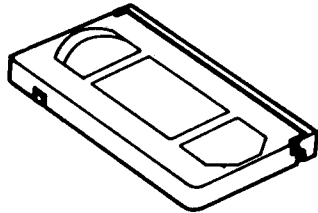
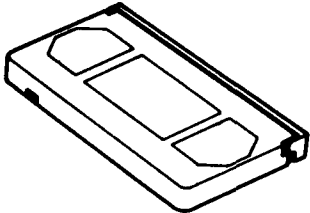


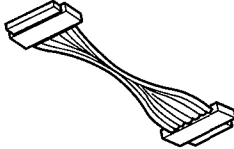
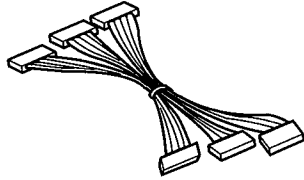
- 1) Remove the Cam Gear, Rack-T
- 2) Remove the P2 and P3 Slant Assembly by turning the Loading Gear(L),(R) in the Loading direction
- 3) Lift up the Loading Gear Assembly(L),(R) from the Deck Mechanism Assembly
- 4) Remove the Spring Load(L),(R).
- 5) Separate the Loading Gear(L), (R) from Arm Load(L), (R).

* NOTE

- 1) When reassembling
 - ① Make sure that the Loading Gear(L) and (R) should not be changed from their original place.
 - ② Align the groove of Loading Gear(L),(O) with the groove of Gear(R),(O)

SECTION 10 ADJUSTMENT

TOOLS AND FIXTURES FOR DECK

| | | |
|---|--|---|
| <p>1. Back tension meter Parts No: J-6082-011-A</p>  | <p>2. Alignment tape Parts No: 9-909-498-01</p>  | <p>3. Troque gauge Parts No: H-7099-039-H</p>  |
| <p>4. Troque gauge adaptor Parts No: H-7099-035-H</p>  | <p>5. Extension Cable (12P) Parts No: 9-909-340-01</p>  | <p>6. Extension Cable (12P X 3) Parts No: 9-909-339-01</p>  |

10-1. MECHANISM STATE SWITCH (MODE SWITCH) CHECK

Purpose: To detect accurately the mechanism state and prevent the mechanism from malfunction

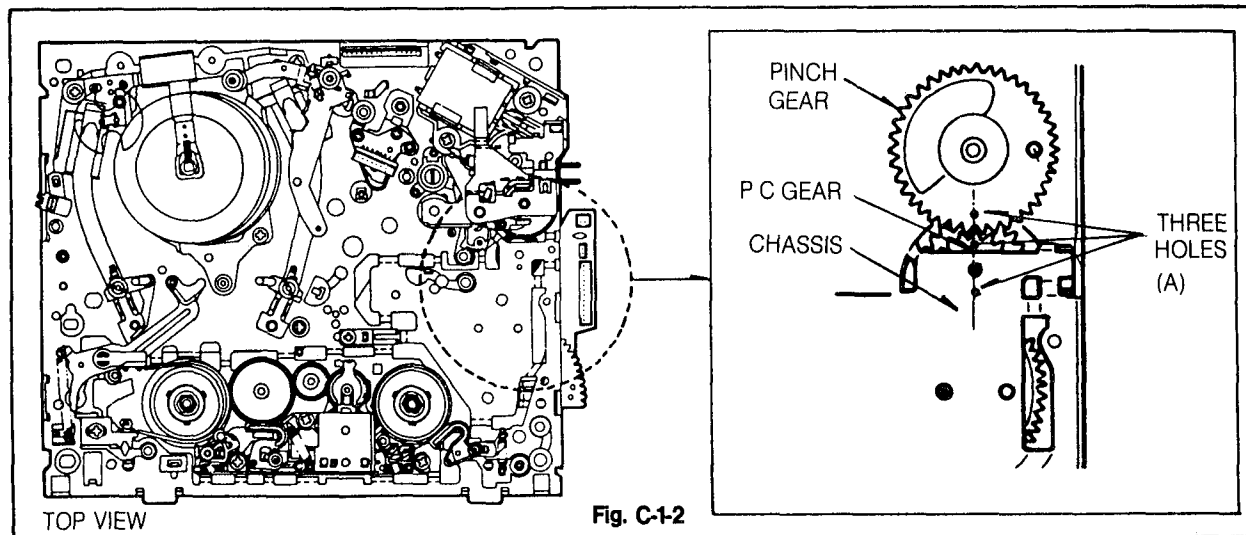
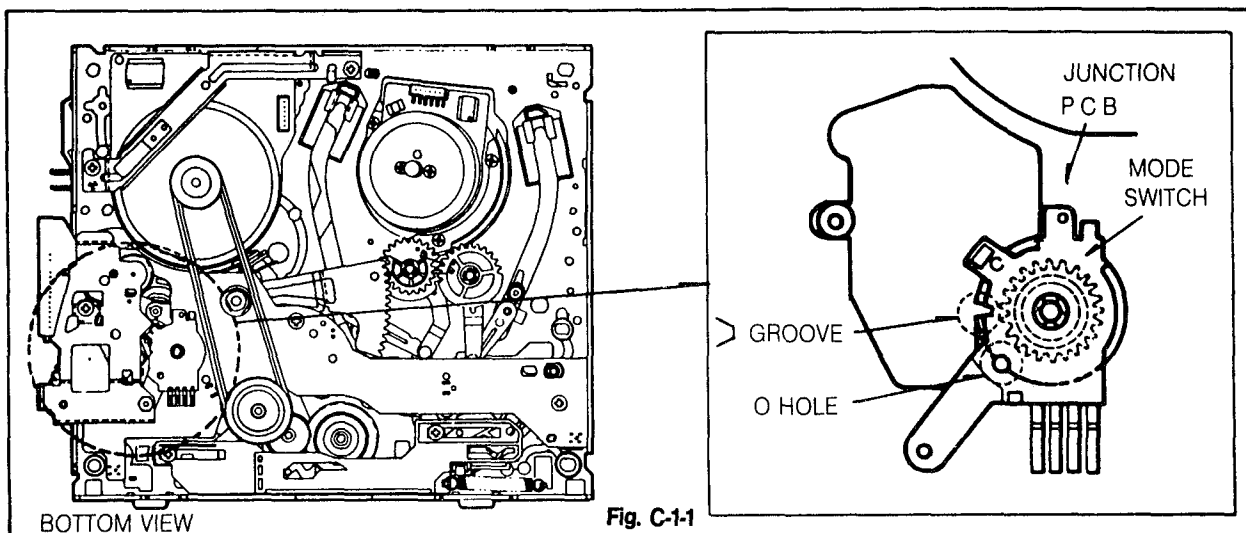
| Test Equipment/Fixture | VCR State | Check Point |
|------------------------|---|---|
| ● Blank tape | ● Eject Mode (with cassette ejected) | ● Mechanism state switch (Mode Switch and Cam) |

Check Procedure

- 1) Turn the VCR on and eject the tape by pressing eject button
- 2) Remove the Cabinet Top, the Main P.C Board and the CST Housing. Then push the CST IN/OUT switch (Loca #137) and eject button at the same time
- 3) Turn the worm (Loca #082) of Loading Motor Assembly (Loca #A10) to the left side (counter-clockwise) to align the three holes (A) of the Pinch Gear, the P.C.Gear and the Chassis

- 4) Remove the Bottom Cover and then check that the groove (V) and the hole (O) of Mode S/W are aligned each other. If the above alignment is not obtained, adjust as follows
 - (1) Remove the Bracket Assembly Bottom and the Capstan Belt in the state of power off
 - (2) Remove the P.C.B Assembly, align the groove (V) and the hole (O) of Mode S/W each other and then reassemble the P.C.B Assembly
 - (3) Turn the power on and perform the various operations to check that the loading and the unloading are correct

Check Diagram



10-2. PREPARATON FOR ADJUSTMENT (To set VCR to the loading state without inserting a cassette)

- 1) Unplug the power cord from the AC outlet
- 2) Remove the Cabinet Top and Front Loading mechanism
- 3) Plug the power cord into the AC outlet
- 4) Turn the VCR on and push the tact switch in the PCB Assembly

The VCR can accept input of each mode in this case
However the rewind and review operation cannot be performed for more than a few seconds because the take-up reel table is in the stop state and reel pulses cannot be detected

(NOTE)

Always return the VCR to the Front Loading Mechanism Assembling State in the following order after the above operations have been performed

- 1) Press the Eject button after turning the power on
- 2) Wait for about 10 seconds until searching out the assembly position.
- 3) Assemble the Front Loading Mechanism and connect the Front Loading Mechanism Connector
- 4) Refer to the "Front Loading Mechanism Disassembly" which is described previously

10-3. REEL TABLE HEIGHT ADJUSTMENT

Purpose: To make the tension of tape constant so that the contact between the video heads and tape is stabilized.

| Test Equipment/Fixture | VCR State | Adjustment Point |
|---|---|------------------|
| ● Tension Meter (Tension adjustment) | ● Play without cassette and with a Tension Meter | ● Holder Band(B) |

Adjustment Procedures

<Position Adjustment>

- 1) Perform loading without inserting a tape and loosen the screw that attaches the Holder Band(B) to the Deck Mechanism Assembly.
- 2) Insert the (-)type driver between the Holder Band(B) and the "V" groove of the chassis.
- 3) Move the Holder Band(B) right and left and align the center of tension post(Guide T-Post) with the center of P1(Shaft P1).(tolerance:Less than $\pm 0.3\text{mm}$)
- 4) Tighten the screw that attaches the Holder Band(B) to Deck Mechanism Assembly.

- (2) below the standard:loosen the screw, move the Holder Band(B) to the left a little and then tighten the screw and make sure that this adjustment is correct.

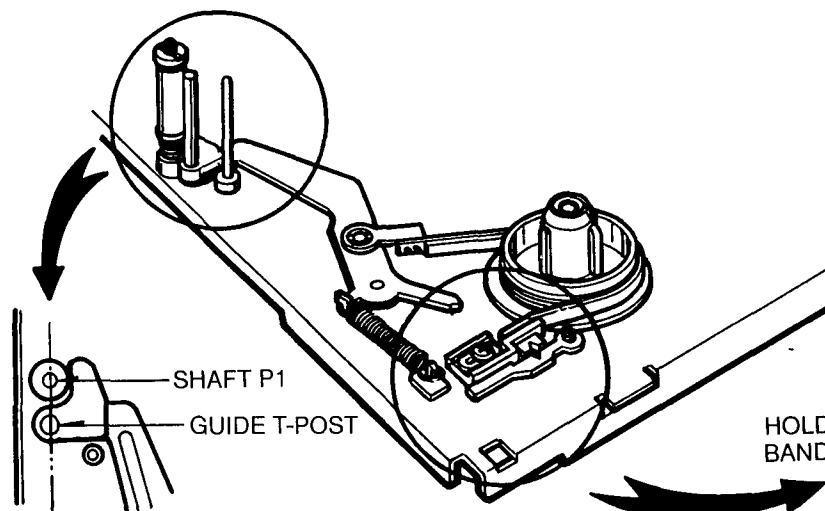
****CAUTION****

The range of movement of Holder Band(B) should be within $\pm 1.5\text{mm}$ while being adjusted
If the range is over, you should recheck the Reel Brake, Tension Arm and Spring.

<Tension Adjustment>

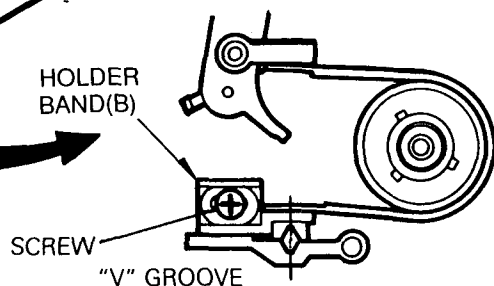
- 1) Play the Tension Meter and read the Tension Meter:
 $38\text{g}\cdot\text{cm} \pm 4\text{g}\cdot\text{cm}$ (reference value).
- 2) If the result is abnormal.
 - (1) over the standard:loosen the screw, move the Holder Band(B) to the right a little and then tighten the screw and make sure that this adjustment is correct.

Adjustment Diagram



ALIGN THE CENTER OF P1 AND
TENSION POST

Fig. C-3-1



BAND ASSY TENSION

Fig. C-3-2

10-4. CHECKING TORQUE

Purpose: It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape run smoothly and satisfy the basic performance of the VCR. Check these if the tape does not run smoothly or the tape speed is abnormal

| Test Equipment/Fixture | | VCR state | |
|--|----------------------|--|--------------------|
| <ul style="list-style-type: none"> ● Torque Gauge ● Torque Gauge Adaptor ● Cassette Torque Meter SRK-VHT-063 : Play, Cue SRK-VHT-303 : Review | | <ul style="list-style-type: none"> ● Set the VCR to each operation mode without inserting a cassette. (See '2 Preparation for Adjustment') | |
| Item | VCR Operation mode | Measurement Reel | Measurement Values |
| Main brake torque, | Eject | Supply and take-up reels | 600g cm or more |
| Slack removal torque | Unloading(power off) | Supply reel | 120~220g·cm |
| Fast forward torque | Fast forward | Take-up reel | 600g·cm or more |
| Rewind torque | Rewind | Supply reel | 600g·cm or more |
| Play take-up torque | Play | Take-Up reel | 90~150g·cm |
| Review Torque | Review | Supply Reel | 120~180 g.cm |
| CUE Torque | Cue | Take-Up Reel | 110~170 g.cm |

Checking Method

The values are measured by using a torque gauge and torque gauge adaptor with the torque gauge fixed

Note: This value is measured when the VCR is shifted in the unloading direction from the fast forward or rewind mode and quick braking is applied to both Reel Tables

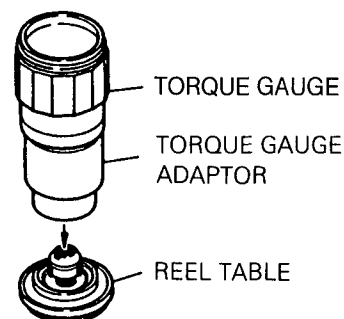
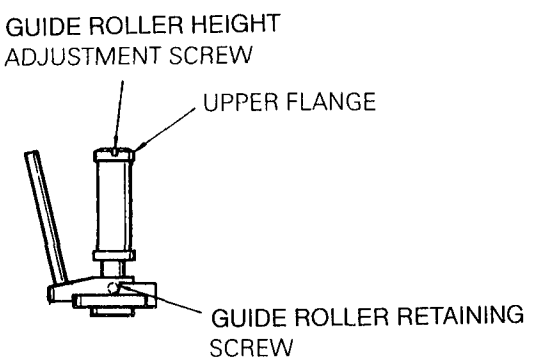


Fig. C-4

10-5. GUIDE ROLLER HEIGHT ADJUSTMENT

Purpose: To regulate the height of tape so that the bottom of tape runs along the tape guide line on the lower drum

A. Preliminary Adjustment

| Test Equipment/Fixture | VCR State | Adjustment Point |
|---|--|--|
| <ul style="list-style-type: none"> ● Hexagonal Wrench or Bended Drive (+) Type ● Post Height Adjusting Driver | <ul style="list-style-type: none"> ● Play an alignment tape | <ul style="list-style-type: none"> ● Guide Roller Height Adjustment Screws on the Supply and Take-Up Guide Rollers |
| Adjustment Procedure <ol style="list-style-type: none"> 1) Perform the precise adjustment. 2) When the Guide Roller is damaged, release the Guide Roller retaining screw and then replace the Guide Roller | | Adjustment Diagram  <p>The diagram shows a side view of a guide roller assembly. A vertical rod is labeled 'GUIDE ROLLER HEIGHT ADJUSTMENT SCREW'. A horizontal flange at the top of the rod is labeled 'UPPER FLANGE'. A screw at the base of the rod is labeled 'GUIDE ROLLER RETAINING SCREW'. The rod is positioned over a horizontal base.</p> <p>Fig. C-5-1</p> |

10-6. PRECISE ADJUSTMENT

| Test Equipment/Fixture | Test Equipment Connection Points | VCR State | Adjustment Point |
|---|---|--|--|
| <ul style="list-style-type: none"> ● Oscilloscope ● Post Height Adjusting Driver ● Alignment Tape(30HMP-2) ● Hexagonal wrench | <ul style="list-style-type: none"> ● CH-1 · PB RF Envelope ● CH-2 (NTSC : SW30Hz PAL : SW25Hz) ● Head Switching Output Point ● RF Envelope Output Point | <ul style="list-style-type: none"> ● Play an alignment tape | <ul style="list-style-type: none"> ● Guide Roller Height Adjustment Screws. |

Adjustment Procedure

- 1) Play an alignment tape after connecting the probe of the oscilloscope to RF Envelope Output Test Point and Head Switching Output Test Point
- 2) Tracking control(in PB mode) Center position(When this adjustment is performed after the drum assembly has been replaced, set the tracking control so that the RF output is maximum)
- 3) Height adjustment screw Flatten the RF waveform
- 4) Turn(Move) the tracking control(playback) clockwise and counterclockwise.(to the right and left)
- 5) Check that any drop of RF output is uniform at the start and end of the waveform.

****CAUTION****

If the adjustment is excessive or insufficient the tape is jammed or folded.

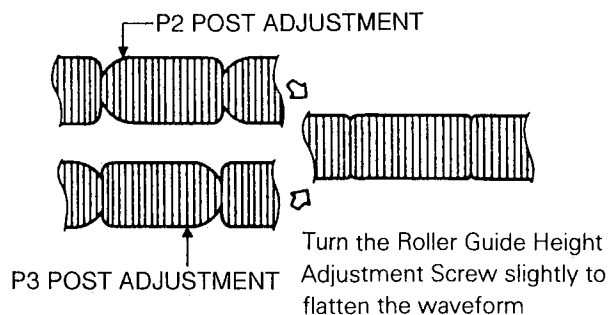
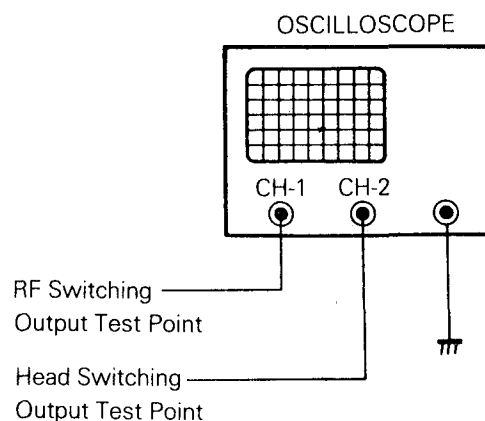
Waveform Diagrams

Fig. C-5-2



Fig. C-5-3

Connection Diagram

10-7. AUDIO/CONTROL (A/C) HEAD ADJUSTMENT

Purpose: To keep the contact between the tape and head so that the specified track is recorded and played back

A. Preliminary Adjustment (Perform the preliminary adjustment, when there is no Audio Output signal with alignment tape.)

| Test Equipment/Fixture | VCR State | Adjustment Points |
|------------------------|----------------------|---|
| ● M3 Nut Driver | | ● Special screw ● Cone Point Screw for tilt ● Azimuth Adjustment Screw ● A/C Head Adjuster |
| ● Blank tape | ● Run the blank tape | |

Adjustment procedure/Adjustment Diagram

- 1) Tighten the special screw so that the spring section protrudes 6.4mm(approx.) over the top of Head Base (1).

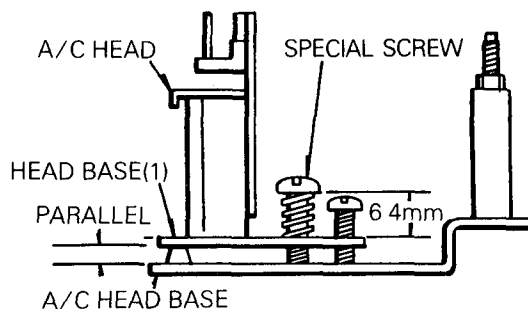


Fig. C-6-1

- 2) Turn the Azimuth Adjustment Screw and Cone Point Screw so that the Head Base(1) and A/C Head Base are parallel

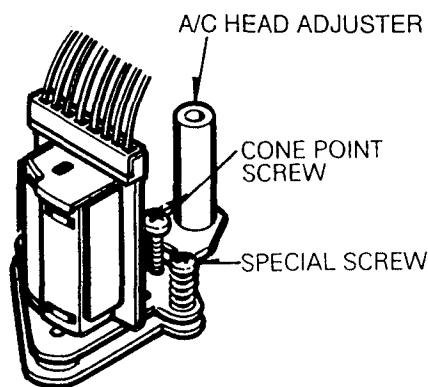


Fig. C-6-2

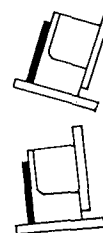
- 3) Load a blank tape and set the VCR to the play mode.

- 4) Confirm that the tape runs fittingly to the lower limit of the P4 post. Also confirm that the tape runs smoothly.
 5) If adjustment is required, turn Cone Point Screw clockwise until curling is apparent at the lower edge of P4. Then turn Cone Point Screw counterclockwise until the curling smooths out

Tape Running Condition



A/C Head in Tilted Condition



Direction to turn for Correction



Fig. C-6-3

- 6) Check that there is no conspicuous curling and folding around the A/C head. If there is conspicuous curling or folding, readjust the Cone Point Screw, Azimuth Adjustment Screw and A/C Head Adjuster. When the bottom edge of tape is 0.20~0.25mm from the bottom edge of the control head's core, the height of A/C head is ideal.

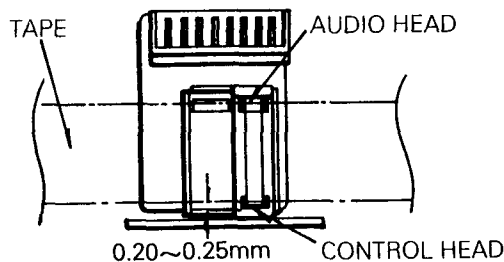
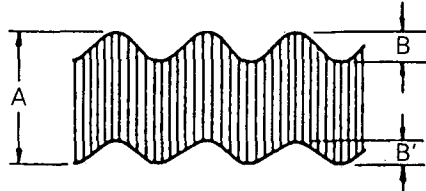


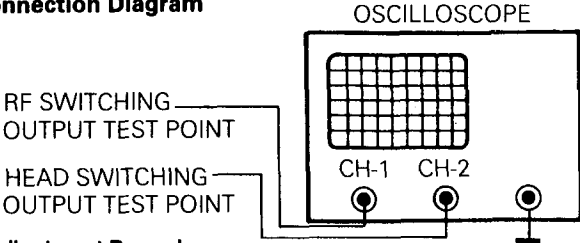
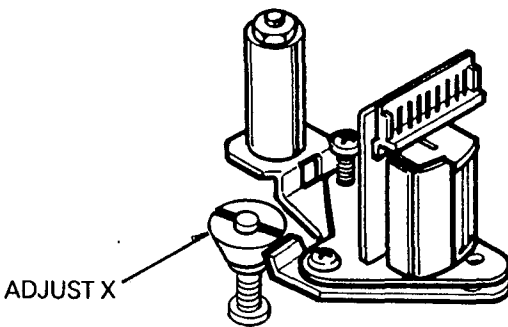
Fig. C-6-4

- 7) If necessary repeat steps 1 through 4 until a precise adjustment is achieved.

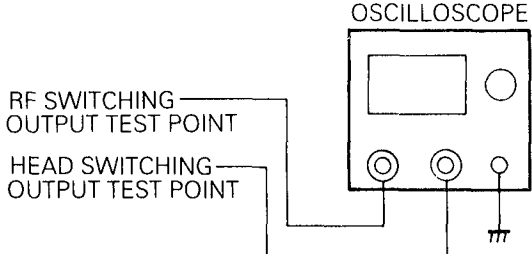
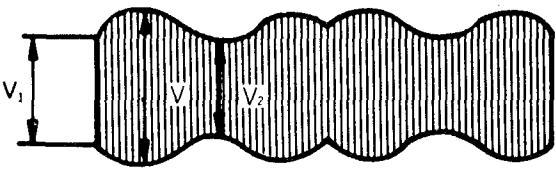
10-8. PRECISE ADJUSTMENT

| Test Equipment/Fixture | Test Equipment Connection Point | VCR State | Adjustment Points |
|---|---|--|---|
| <ul style="list-style-type: none"> ● Oscilloscope ● Alignment tapes ● M3 Nut Driver | <ul style="list-style-type: none"> ● Audio output jack | <ul style="list-style-type: none"> ● Play an alignment tape 1KHz, 7KHz sections | <ul style="list-style-type: none"> ● Azimuth Adjustment Screw ● A/C Head adjuster ● Cone point screw |
| Adjustment Procedure <ol style="list-style-type: none"> 1) Connect the probe of oscilloscope to audio output jack 2) Adjust the Azimuth Adjustment Screw, A/C Head adjuster and cone point screw slightly and alternately so that an Audio 1KHz output is maximum and flat. (minimum fluctuation). 3) Adjust the Azimuth Adjustment Screw slightly and alternately so that the Audio 7KHz output is maximum | | Waveform Diagram  <p>A. Maximum B. Minimum</p> <p>Fig. C-6-5</p> | |

10-9. X-VALUE ADJUSTMENT

| Purpose: To obtain compatibility with other VCRs | | | |
|--|--|--|--|
| Test Equipment/ Jigs | Test Equipment Connection Points | VCR State | Adjustment Points |
| <ul style="list-style-type: none"> ● Oscilloscope ● Alignment tapes ● Post Height Adjusting Driver | <ul style="list-style-type: none"> ● CH-1: PB RF Envelope ● CH-2: SW 30Hz ● Head Switching Output Test Point ● RF Envelope Output Test Point | <ul style="list-style-type: none"> ● Play an alignment tape | <ul style="list-style-type: none"> ● Adjust X |
| Connection Diagram  | | Adjustment Diagram  <p>Fig. C-7</p> | |
| Adjustment Procedure <ol style="list-style-type: none"> 1) Insert a cassette tape, and then "AUTO TRACKING" will be displayed on the Digitron, then push the Tracking ⊕ or ⊖ Keys one time as soon as possible to make the VCR release the Auto Tracking. 2) Turn the Adjust X to the maximum RF Envelope level when the VCR is free from the Auto tracking 3) If RF envelope output is maximized from the center click position in the right direction (clockwise), set the tracking control to the center and turn the X Adjust counterclockwise. 4) If in the left direction (counterclockwise), turn it clockwise by the same method. 5) In case of the 30 μm, head will trace over a 60 μm width track, readjust it so that RF Envelope output begins falling at the same angle when tracking control is turned either left or right. | | | |

10-10. ADJUSTMENT AFTER REPLACING DRUM ASSEMBLY (VIDEO HEADS)

| Purpose: To suppress drift in the height relative to the Guide Roller and drift of the X Value after replacing the drum | | | |
|--|---|--|--|
| Test Equipment/Fixture | Test Equipment Connection Points | VCR State | Adjustment Points |
| <ul style="list-style-type: none"> ● Oscilloscope ● Post Height Adjusting Driver ● Alignment tape ● Blank tape ● M3 Nut Driver | Checking the flatness <ul style="list-style-type: none"> ● CH-1 PB RF Envelope ● CH-2 (NTSC : SW30Hz PAL : SW25Hz) ● Head Switching Output Point ● RF Envelope Output Point | <ul style="list-style-type: none"> ● Run the blank tape ● Play an alignment tape | <ul style="list-style-type: none"> ● Guide Rollers Precise Adjustment ● Switching point ● Tracking point ● X-Value |
| Connection Diagram  | | Waveform Diagram  <p> $V_1/V \text{ MAX} \geq 0.7$ $V_2/V \text{ MAX} \geq 0.8$ RF ENVELOPE OUTPUT </p> | |
| Checking/Adjustment Procedure <ol style="list-style-type: none"> 1) Run the blank tape, check and adjust whether the Roller Guide is curling or creasing tape around the Roller Guide 2) Check the RF envelope output flatness and adjust the Roller Guide Height while playing an alignment tape 3) Adjust the head switching point 4) Check that RF envelope output is maximum when the tracking is at the initial position 5) Adjust the Tracking Preset and X-Value Adjust with X Adjust | | Fig. C-8 | |

10-11. CHECK OF TAPE TRAVEL AFTER REASSEMBLING DECK ASSEMBLY

Check Audio and RF Locking Time during playback after CUE or REV.

| Test Equipment/Fixture | Specification | Test Equipment Connection Point | VCR State |
|--|---|---|--|
| <ul style="list-style-type: none"> ● Oscilloscope ● Alignment tape (with 6H 3kHz Color Bar Signal) ● Stop Watch | <ul style="list-style-type: none"> ● RF Locking Time . Less than 5 sec ● Audio Locking Time . Less than 10 sec. | <ul style="list-style-type: none"> ● CH-1 PB RF Envelope ● CH-2 . Audio Output ● RF Envelope Output Point ● Audio Output Jack | <ul style="list-style-type: none"> ● Play an alignment tape (with 6H 3kHz Color Bar Signal) |
| Checking Procedure <ol style="list-style-type: none"> 1) Change the mode of CUE or REV to play. 2) At this time, confirm that the Locking Time of Audio and RF Output Waveform fits to specification. 3) If the results checked above are abnormal, repeat adjustments 4 through 8 <p style="text-align: right;">※ 6H · LP</p> | | | |

Check the coincidence of both Audio and Video Sync.(Lip Sync.)

| Test Equipment/Fixture | Specification | Test Equipment Connection Point | VCR State |
|---|---|---|---|
| <ul style="list-style-type: none"> ● Oscilloscope ● 2H 9V Tape(for X-Value Adjustment Coincidence) or alignment tape | <ul style="list-style-type: none"> ● Less than $\pm 0.5V$ | <ul style="list-style-type: none"> ● CH-1 : PB RF Envelope ● CH-2 : Audio Output ● RF Envelope Output Point ● Audio Output Jack | <ul style="list-style-type: none"> ● Play a 2H 9V tape or an alignment tape. |
| Checking Procedure 1) Confirm that the period ④ of Fig. C-9-1 is within $\pm 0.5V$ 2) If the result is abnormal, repeat adjustment #7. (X-Value adjustment). | | | |

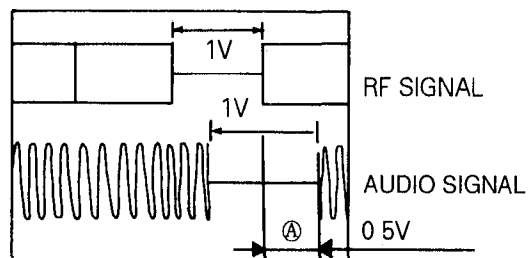


Fig. C-9-1

※ 2H : SP, V: Vertical

Check the occurrence of tape curl and jam

| Test Equipment/Fixture | Specification | VCR State |
|--|--|--|
| <ul style="list-style-type: none"> ● T-160 Tape ● T-120 Tape | <ul style="list-style-type: none"> ● Be sure there is no jam or curl at the beginning, the middle period or the end of the T-160 tape | <ul style="list-style-type: none"> ● Run the CUE, REV play mode at the beginning and the end of the tape. |
| Checking Procedure 1) Confirm whether the state of each transportation post is normal. 2) Make sure nothing is wrong with the operation of the Counter, when the lower part of tape is folded. 3) Be sure there is nothing wrong in the Audio signal, when the upper part of tape is folded. 4) If the result is abnormal, repeat adjustment #5 and #6. | | |

Check the adjustment state of Take-Up Guide

| Test Equipment/Fixture | Specification |
|--|---|
| <ul style="list-style-type: none"> ● T-120 Tape ● Take-Up Guide Adjusting Driver | <ul style="list-style-type: none"> ● Review : Travel the tape that align the top of the P4 Guide and the bottom of the Tape or be folded. ● Play : Travel the tape that align the top of the P4 Guide and the bottom of the Tape. |
| Checking Procedure 1) Run the CUE or PLAY mode at the middle period or the end of the T-120 tape. 2) Run the REV mode at the play or cue part of tape 3) At this time, confirm that the change of tape height at the P4 Guide fits to specification 4) If the result is abnormal, refer to Table 9-1. 5) Play the beginning of T-120 tape(within 5 min.) 6) Confirm that the state of tape transportation fit to specification in P4 Guide 7) Remove the Tension Arm Assembly by rotating in the clockwise direction and then confirm that the state of tape transportation fit to specification. 8) If the result is abnormal, refer to Table 9-1. | |

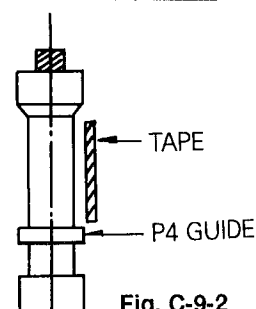


Fig. C-9-2

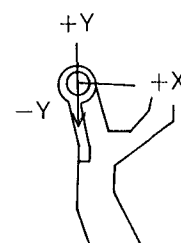


Fig. C-9-3

| PLAY Mode | REV Mode | Adjustment Method |
|--------------|--------------|-------------------------------------|
| Tape Falling | Tape Lift | Bend the shaft of the direction +Y |
| Tape Lift | Tape Falling | Bend the shaft of the direction -Y. |

Table 9-1

10-12. MAINTENANCE/INSPECTION PROCEDURE**(1) Required Maintenance**




The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, are necessary.

(2) Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used.

But, in general home use, a good picture will be maintained if the inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

| When inspection is necessary Average hours used per day | About 1 year | About 18 months | About 3 years |
|--|---|-----------------|---------------|
| One hour |  | | |
| Two hours |  | | |
| Three hours |  | | |

(3) Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Table 2

| Phenomenon | Inspection |
|--|--|
| Poor S/N, no color | Dirt on video head or worn video head |
| Tape does not run or tape is slack | Dirt on pressure roller, belt or flywheel belt |
| Vertical jitter, horizontal jitter | Dirt on video head or in tape transport system |
| Color beats | Dirt on full-erase head |
| Low volume or sound distorted | Dirt on audio/control head |
| Fast forward or rewind is not done or rotation is slow | Dirt on belt |

(4) Supplies Required for Inspection and Maintenance

- (1) Greases Kanto G-31 (or equivalent)
- (2) Alcohol (Isopropyl Alcohol)
- (3) Cleaning Patches

5) Maintenance Procedure

5-1) Cleaning

(1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with alcohol(Isopropyl Alcohol) to the point indicated. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically and make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged)

Thoroughly dry the head. Then run test tape. If alcohol (Isopropyl Alcohol) remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with alcohol (Isopropyl Alcohol).

Note:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which move the tape
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no force is applied to the system that would cause deforming.

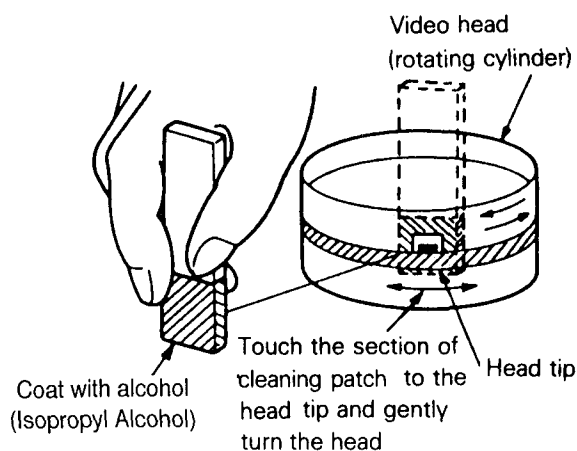


Fig. C-10-1

5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport of drive system. Wipe any excess and clean with cleaning patch wetted in alcohol(Isopropyl Alcohol).

(2) Periodic greasing

Grease specified locations every 5,000hours

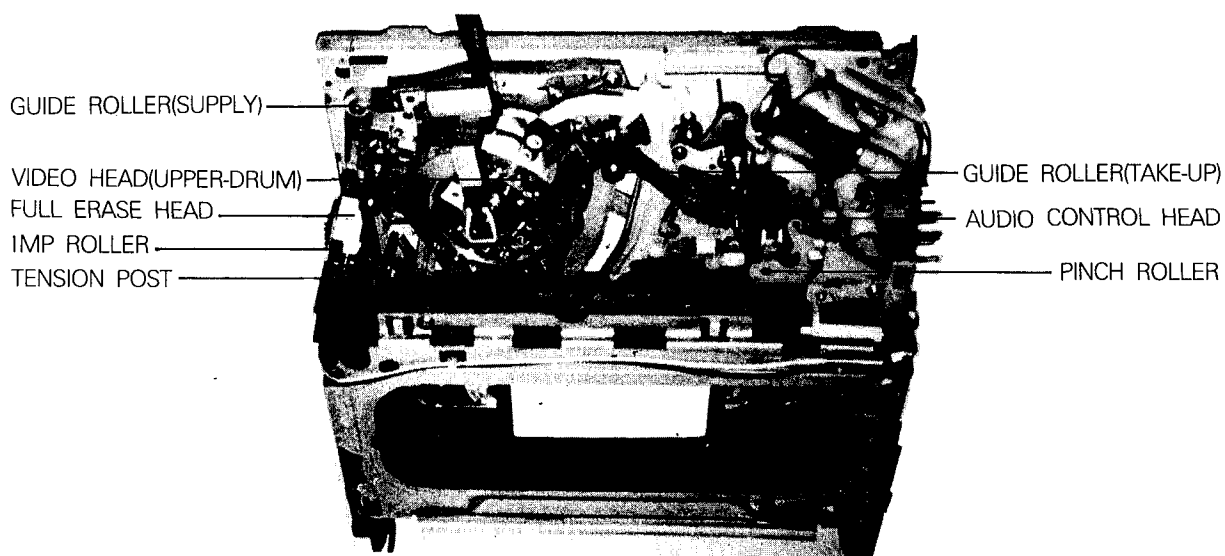


Fig. C-10-2 Tape Transport System

| Phenomenon | Inspection | Replace ment | |
|------------------------------------|-------------------------------|-----------------|-----|
| Color beats | Dirt on full-erase head | ○ | → ① |
| Poor S/N no color | Dirt on video head | ○ | → ② |
| Vertical jitter | Dirt on video head | ○ | → ③ |
| | Dirt in tape transport system | | |
| Low volume, Sound distorted | Dirt on audio/control head | ○ | → ④ |
| Tape does not run Tape is slack | Dirt on pinch roller | ○ | → ⑤ |

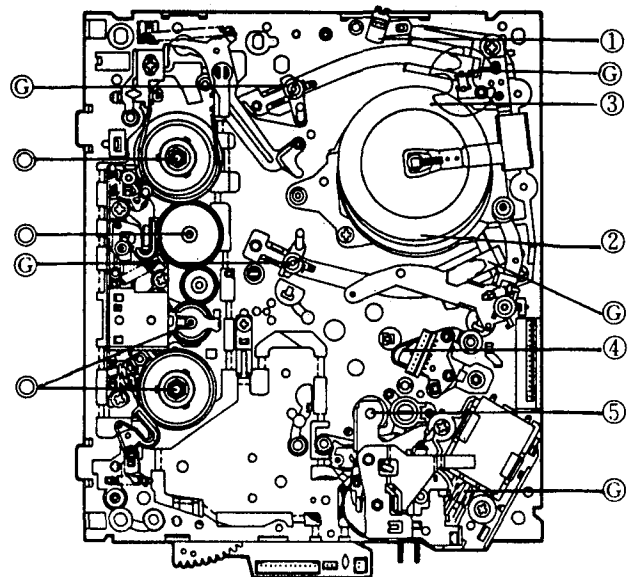


Fig. A-11 Top View of Mechanism

| Phenomenon | Inspection Location | Replace ment | |
|--|---------------------|-----------------|-----|
| Do not fast forward or rewind, or rotation is slow | Dirt on reel belt | ○ | → ⑥ |
| Tape does not run | | | |
| Slack tape | | | |

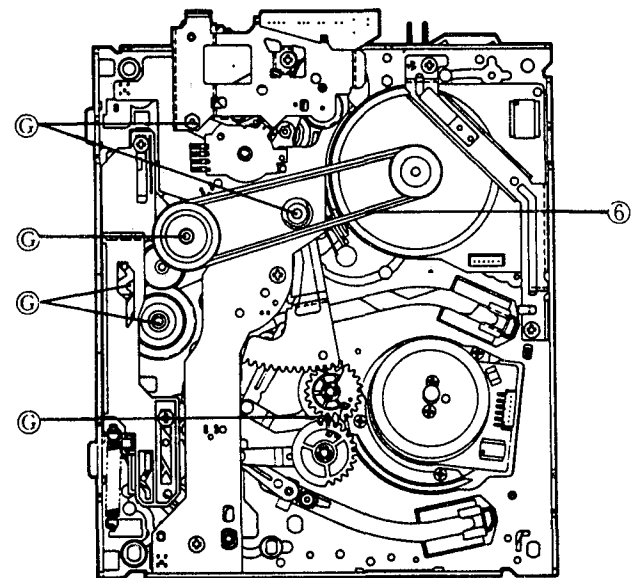


Fig. A-12 Bottom View of Mechanism

Note: If locations marked with ○ do not operate normally after cleaning, check for wear and replace.
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

Ⓒ:Grease
⓪:Oil

SECTION 11

CIRCUIT ADJUSTMENT

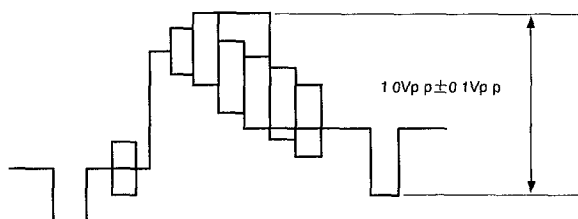
11-1. Y/C Adjustment

1) PB LEVEL Adjustment

| MODE | Measure point | Adjust Point | Normal |
|-------|---------------|--------------|-----------------------|
| PB SP | V OUT | VR 301 | 1.0Vp-p \pm 0.1Vp-p |

- Playback an SP standard Tape
- Connect CH-1 of the oscilloscope to V out
- Adjust VR301 so that video out level is 1.0 \pm 0.1Vp-p

Waveform

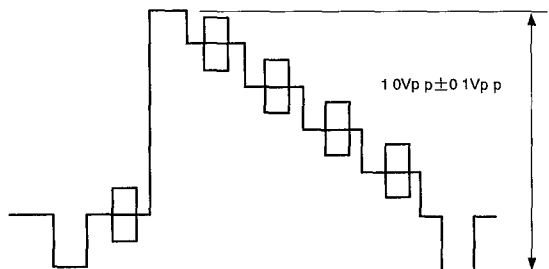


2) EE LEVEL Adjustment

| MODE | Measure point | Adjust Point | Normal |
|---------|---------------|--------------|-----------------------|
| EE(REC) | V OUT | VR 303 | 1.0Vp-p \pm 0.1Vp-p |

- Set the VCR to A/V mode
- Input the 100% color bar signal of the pattern generator to Video in Jack (1Vp-p)
- Connect CH-1 terminal of the oscilloscope to the Video out
- Adjust VR303 so that the Video out level is 1.0 \pm 0.1Vp-p

Waveform



3) Y/C Separation Adjustment

| MODE | Measure point | Adjust Point | Normal |
|---------|---------------|--------------|--|
| EE(REC) | IC301 21PIN | VR 305 | The 3.58MHz Y component of the remained multiburst signal is minimum |

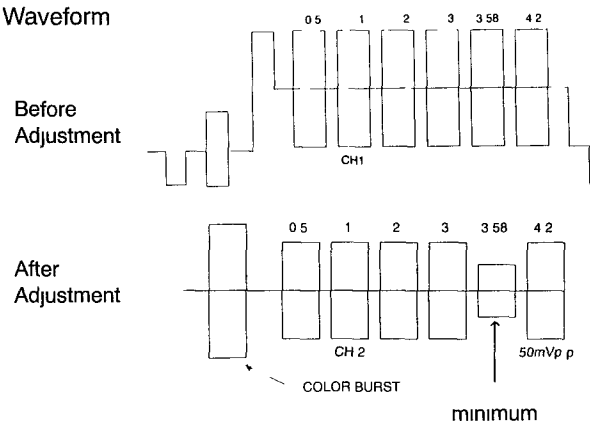
- Set the VCR to A/V mode
- Input the 100% multi-burst signal of pattern generator to video in jack
- Connect CH-1 of the oscilloscope to Pin21 of IC301 and CH-2 to the video out and then CH-2 trigger

* OSCILLOSCOPE RANGE

- CH-1 0.1V/DIV
- CH-2 0.5V/DIV
- TIME 10 μ S

- Adjust VR305 so that the 3.58MHz Y component of the remaining multi burst signal is minimum

Waveform



4) FM CARRIER SYNC TIP Adjustment

| MODE | Measure point | Adjust Point | Normal |
|---------|---------------|--------------|---|
| EE(REC) | IC301 34PIN | VR 304 | 3.4MHz \pm 0.05MHz (Deviation 1 \pm 0.1MHz) |

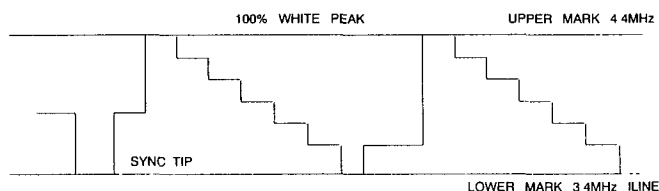
- Set the VCR to A/V mode
- Input the 100% color bar signal of pattern generator to A/V video in Jack (1Vp-p)
- Connect the frequency to Pin34 of IC301 and modem test input terminal
- Adjust VR 304 so that the counter read 3.4MHz

5) DEVIATION WHITE PEAK Adjustment

| MODE | Measure point | Adjust Point | Normal |
|---------|-------------------------------|--------------|---|
| EE(REC) | IC301: 34PIN 10430 (V.OUT) | VR 302 | 4.4MHz \pm 0.05MHz (DEVIATION 1 \pm 0.1MHz) |

- Set the VCR to A/V mode.
- Input the 100% color bar signal of pattern generator to A/V video in Jack. (1Vp-p)
- Connect the oscilloscope probe (10:1) to Pin34 of IC301 and modern test input terminal. Connect the modern test output to CH-1 of the oscilloscope with BMC cable and connect the Video output to CH-2 of the oscilloscope and then trigger about 2H. (4.4MHz)
- Adjust VR302 so that the oscilloscope may read 1Vp-p.

Waveform

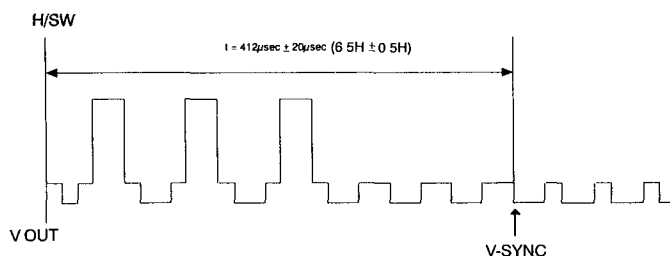


6) PG Adjustment

| MODE | Measure point | Adjust Point | Normal |
|-------|---------------|--------------|----------------|
| PB SP | W383, V.OUT | VR 201 | 412 \pm 20uS |

- Playback an SP standard tape.
- Connect CH-1 of the oscilloscope to W383(H/SW), CH-2 to V.OUT and Trigger to CH-1.
- * OSCILLOSCOPE RANGE
 - CH-1: 2V/DIV
 - CH-2: 0.5V/DIV
 - TIME: 50uS
- Adjust VR201 so that the time vinterval from the falling edge of H/SW signal to the V-SYNC of video signal is $t=412\mu\text{sec} \pm 20\mu\text{sec}$.

Waveform



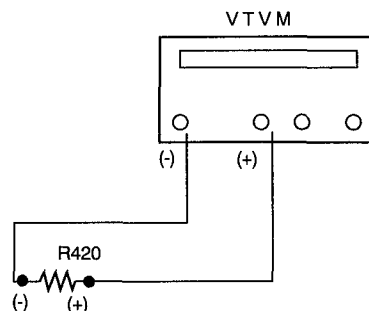
11-2. AUDIO Adjustment

1) REC BIAS LEVEL Adjustment

| MODE | Measure point | Adjust Point | Normal |
|------|---------------|--------------|----------------------|
| REC | R420 | VR 401 | 3.0mV \pm 0.1mVrms |

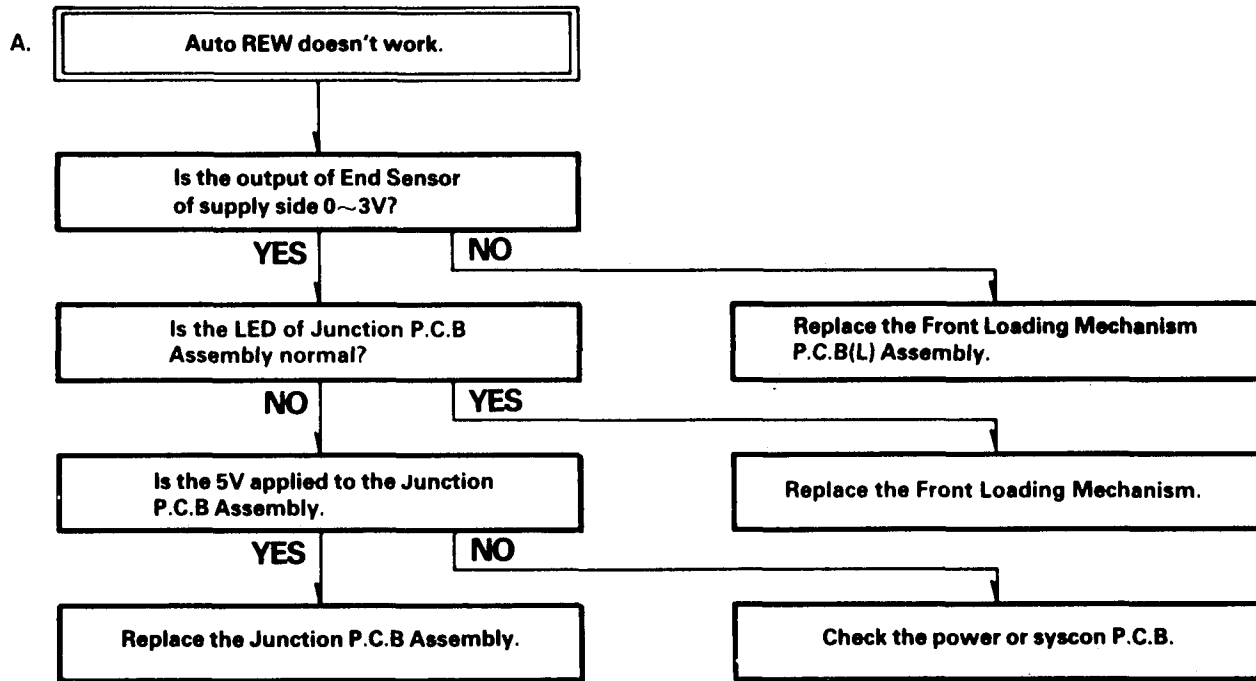
- Insert the test tape for recording and press the REC button.
- Connect the (+) and (-) terminals of multimeter to both terminals of R420. At this time, adjust VR401 so that the Bias level may be within 3.0mV \pm 0.1mVrms.

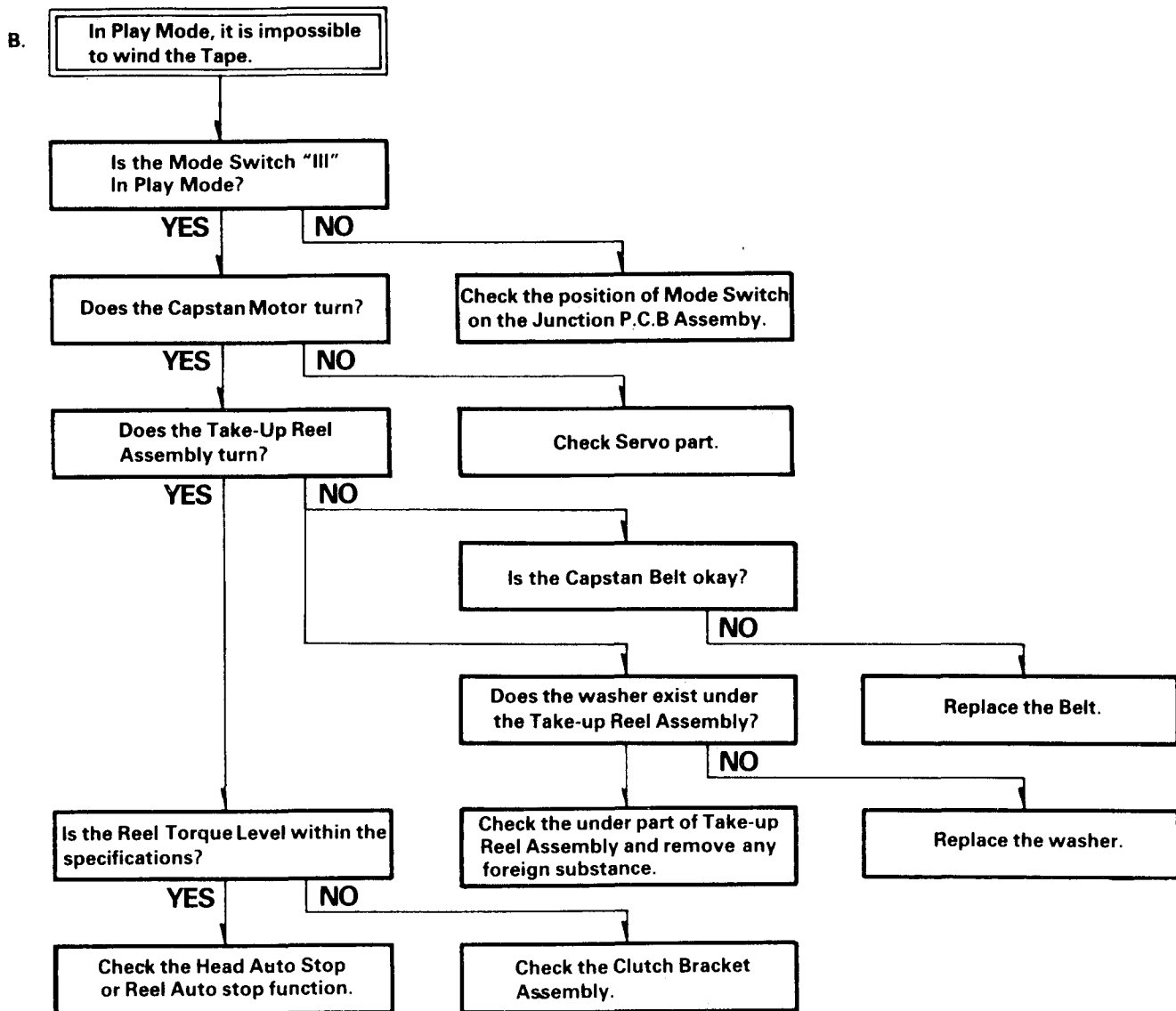
Connection diagram



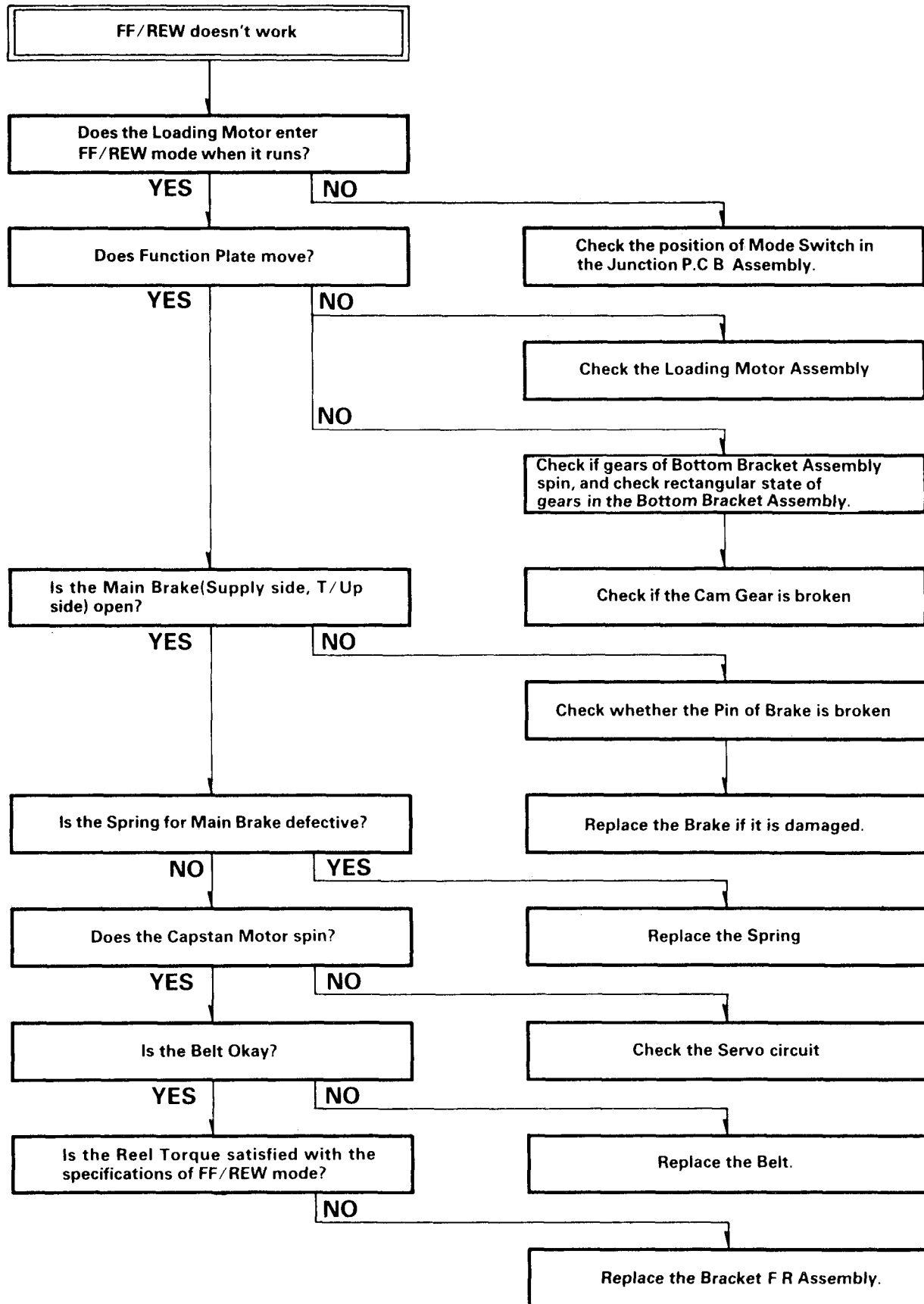
SECTION 12 TROUBLESHOOTING

12-1. DECK MECHANISM

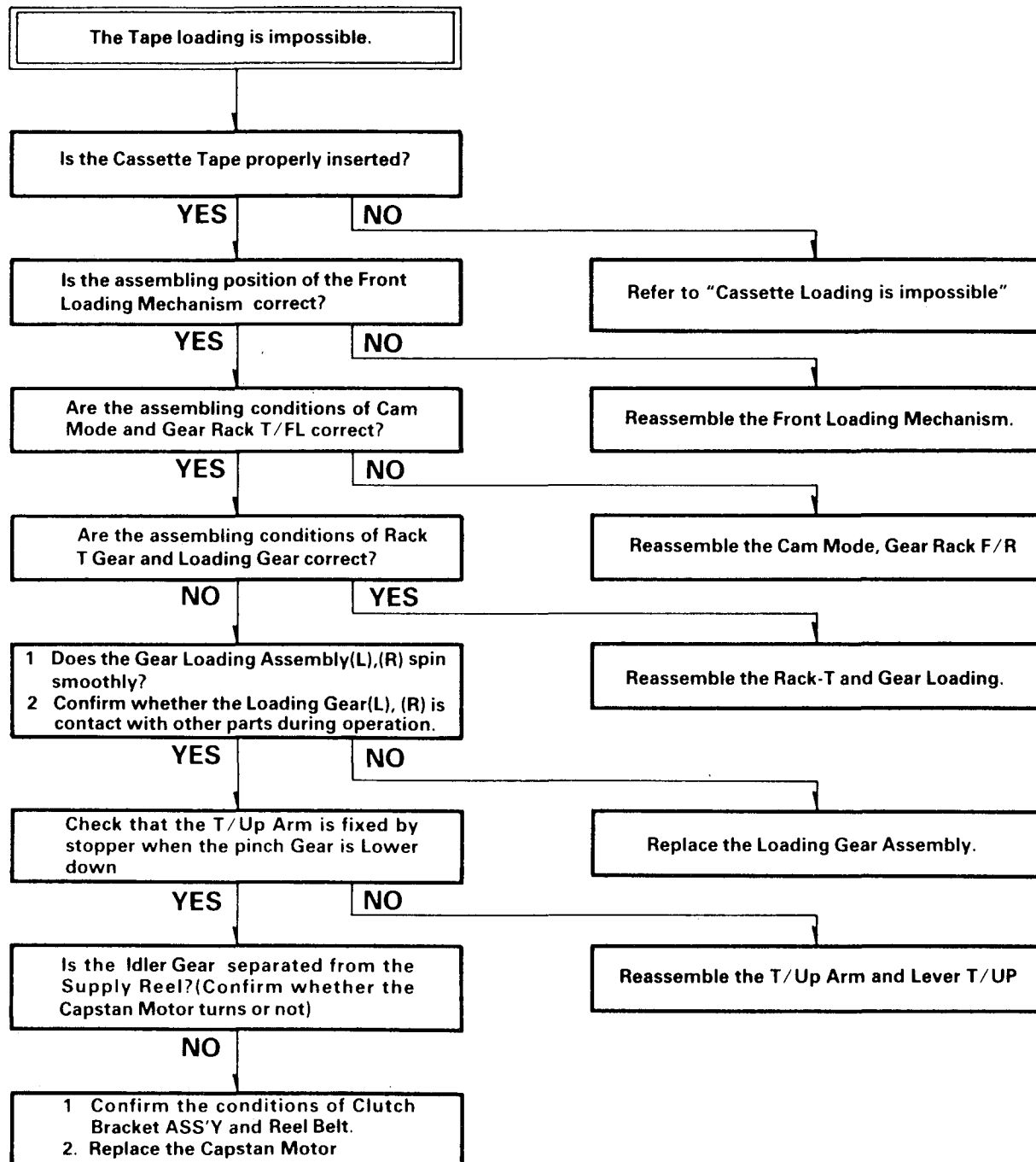




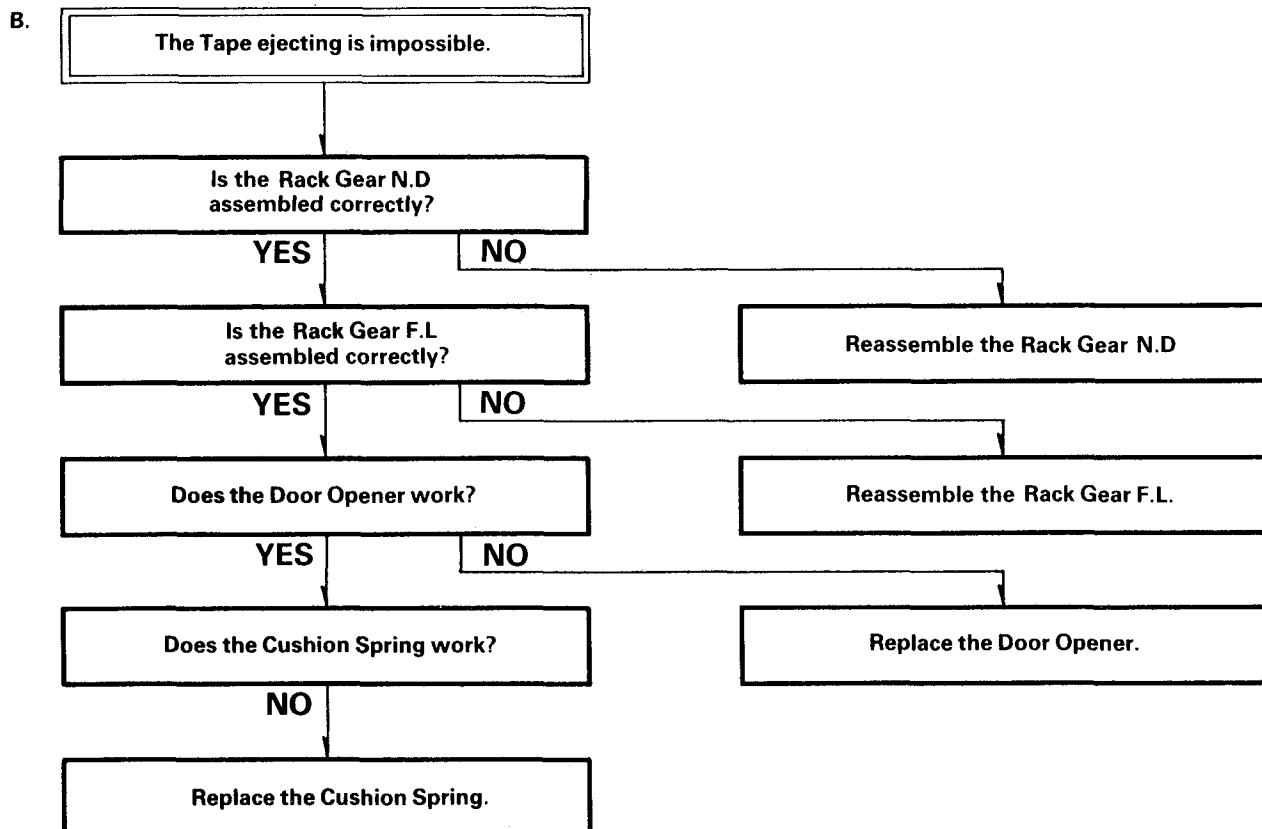
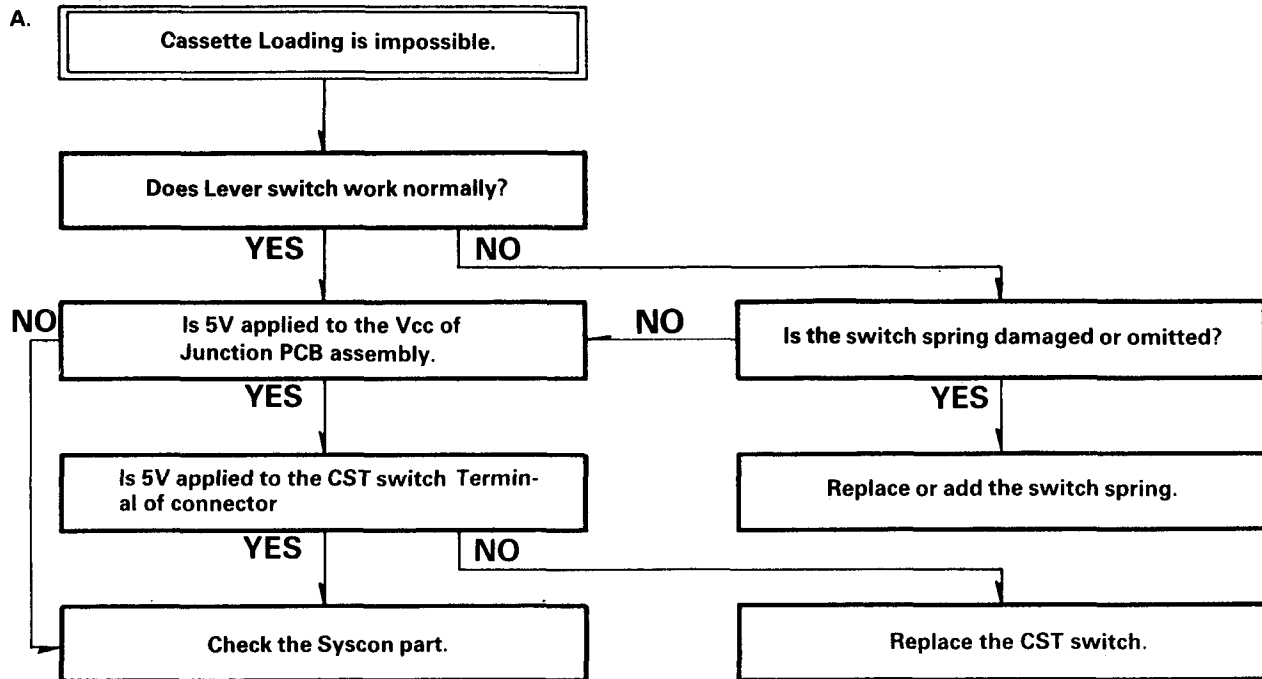
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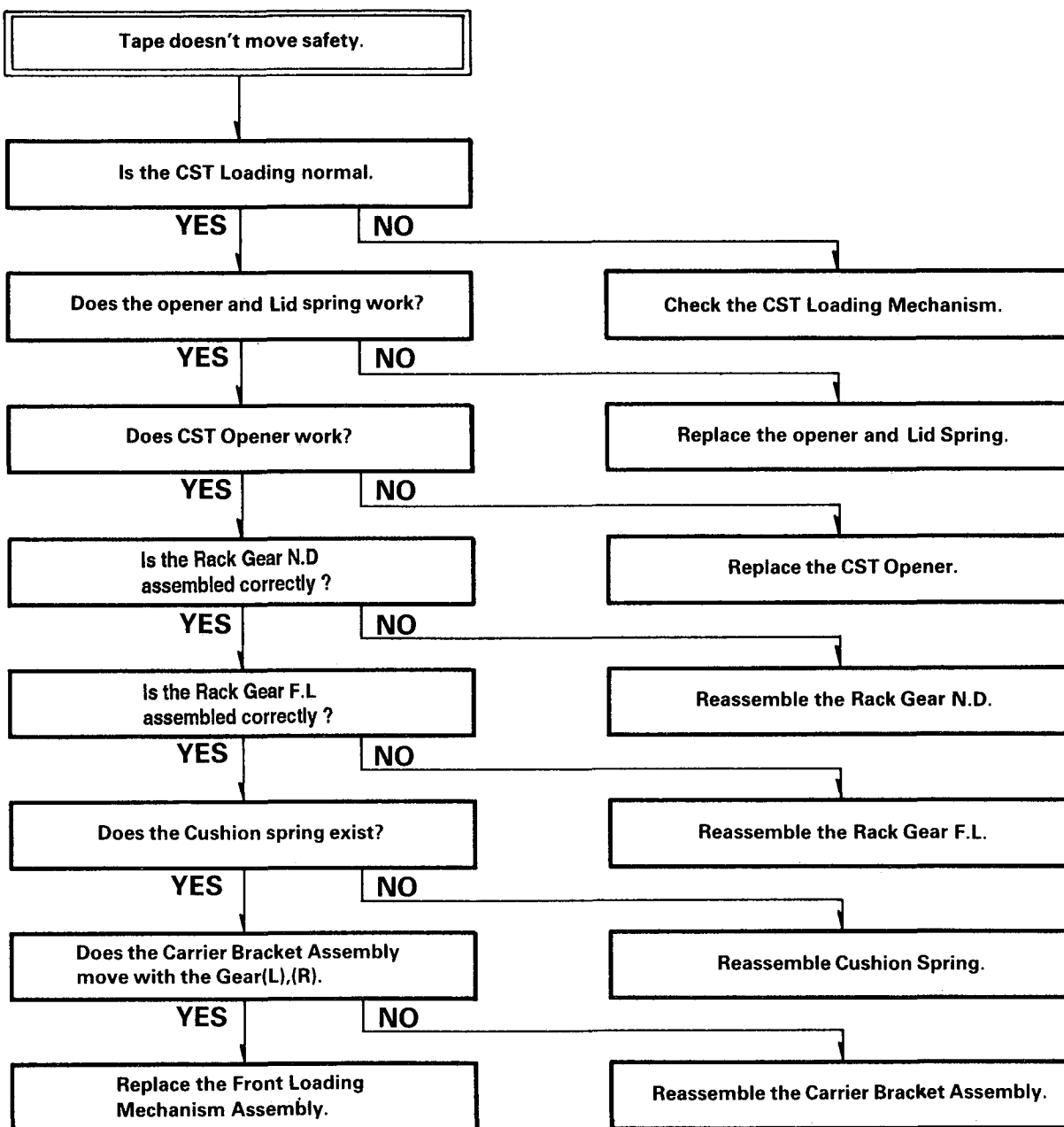
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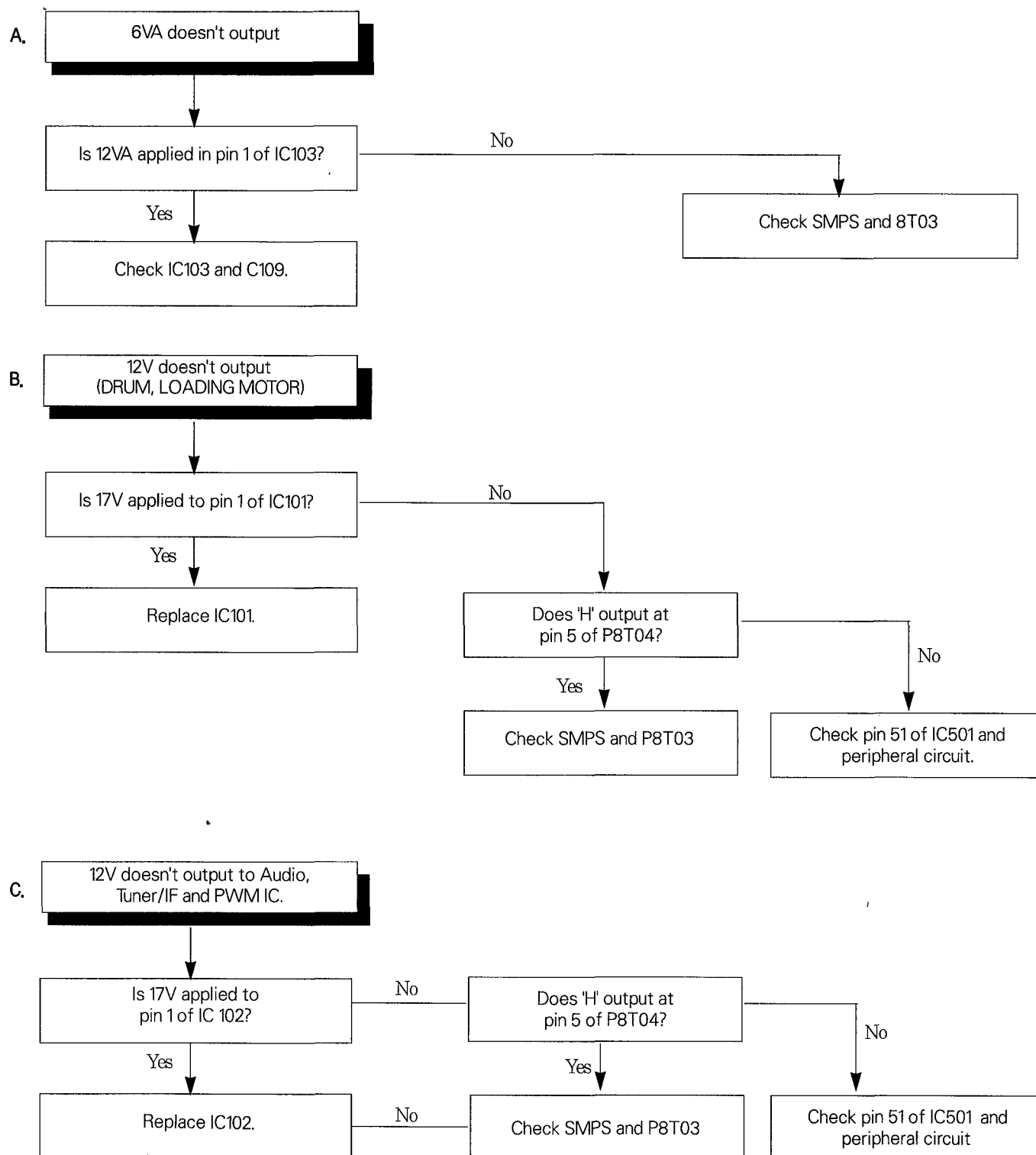
12-2. Front Loading Mechanism

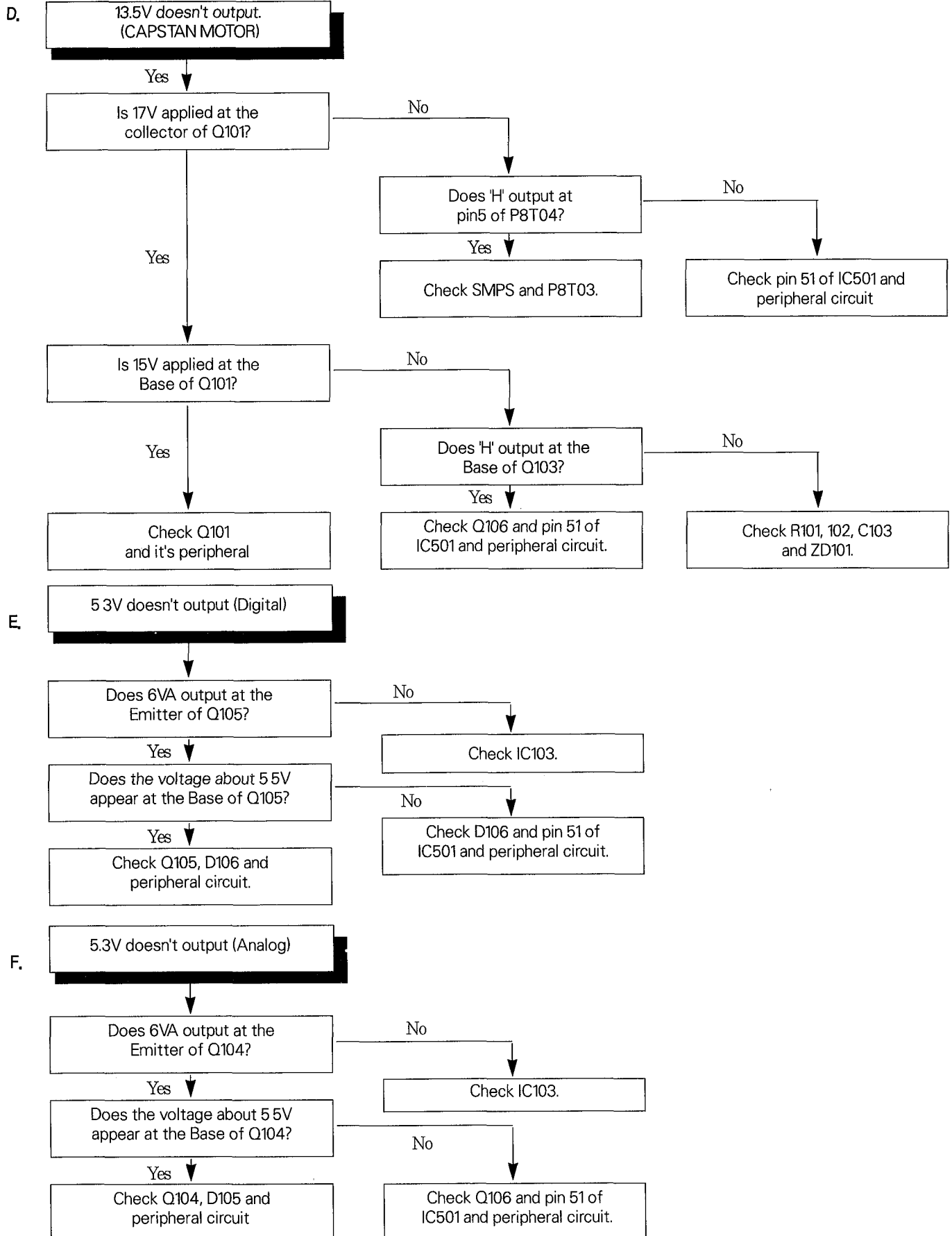


C.

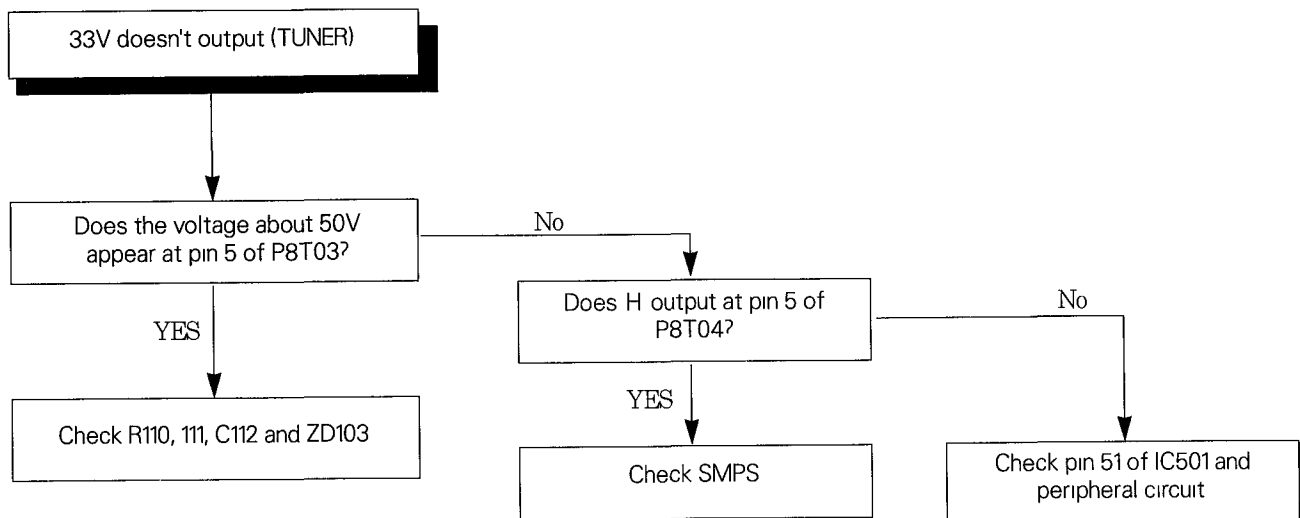


12-3. Power Circuit

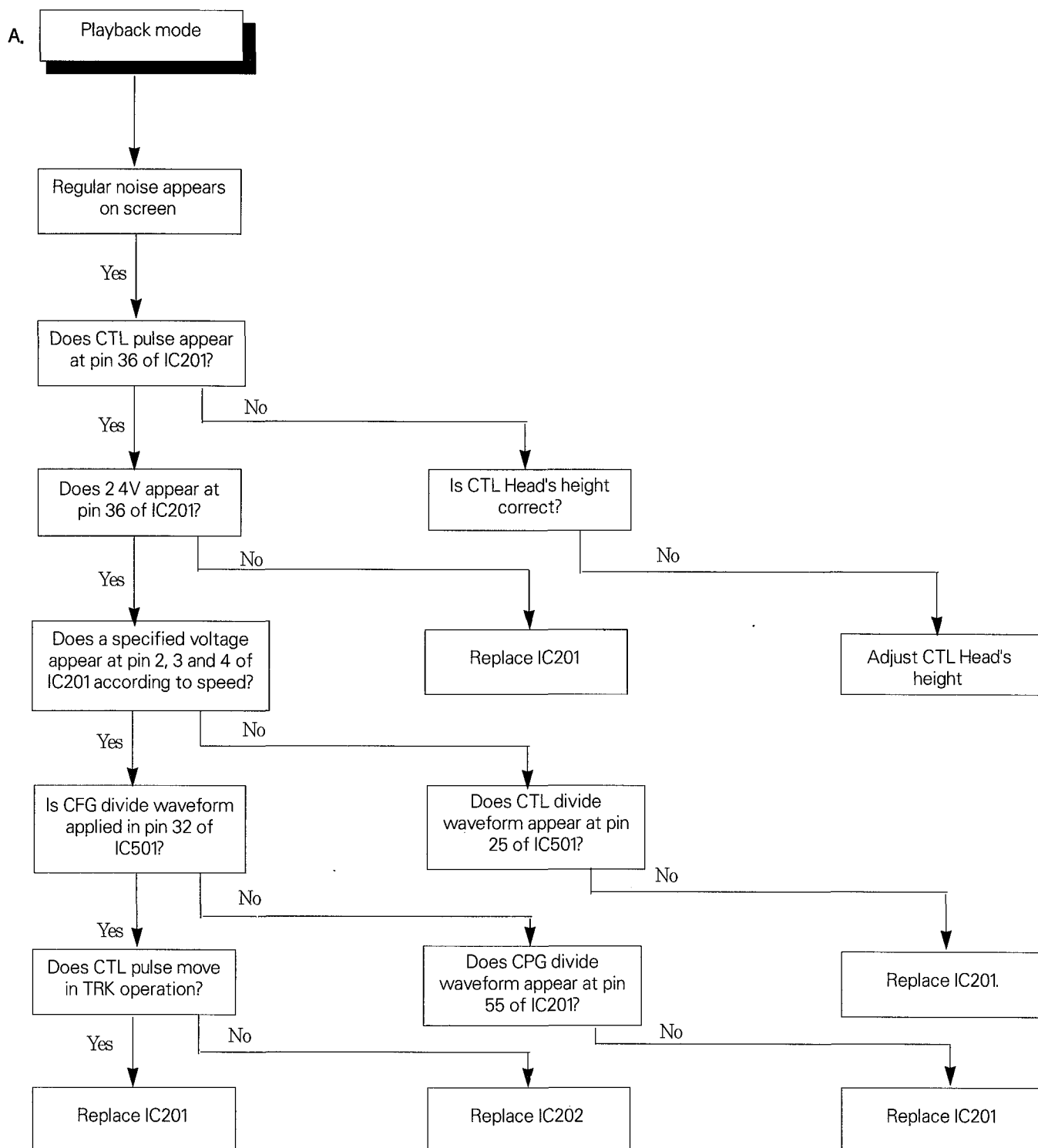


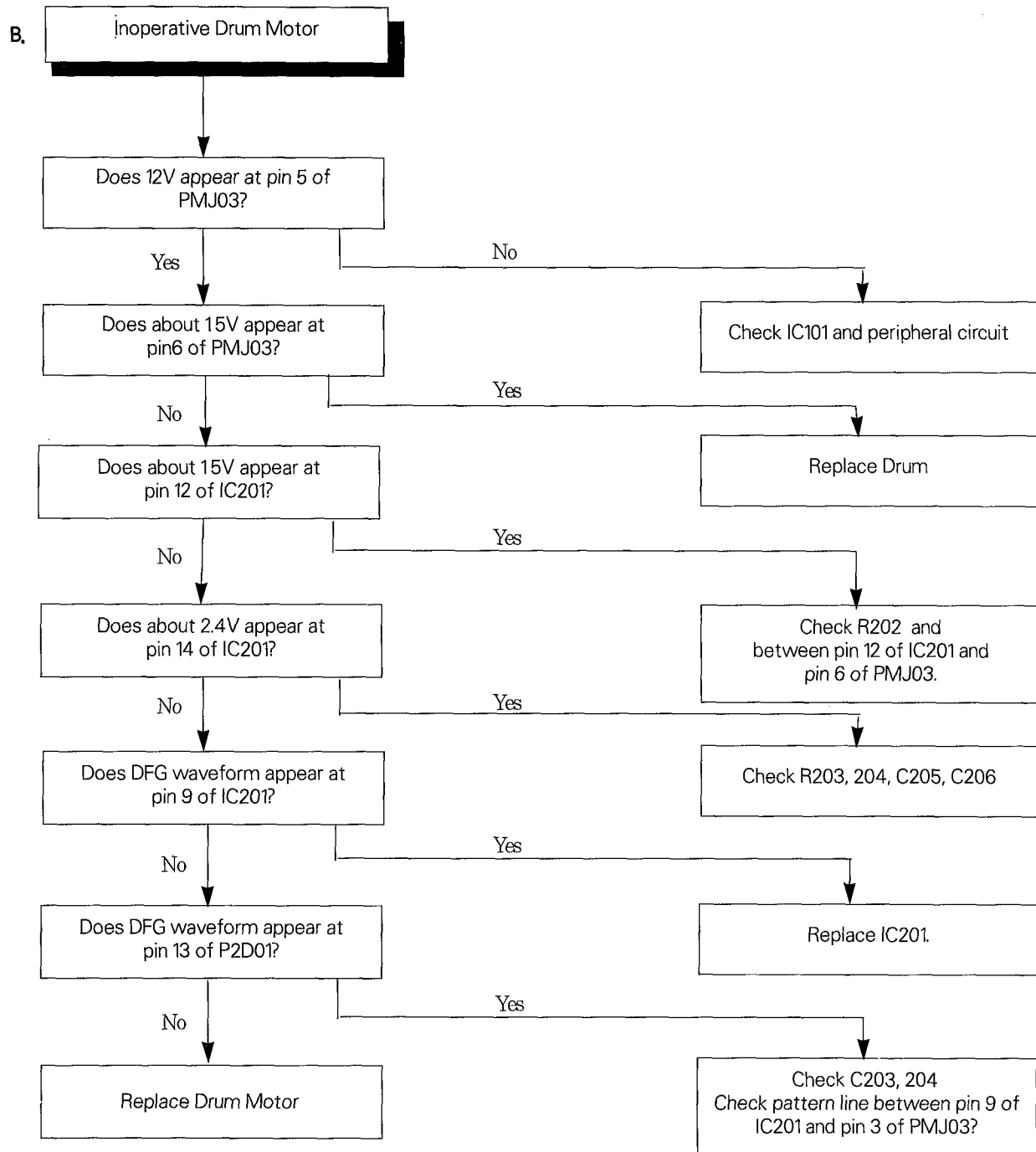


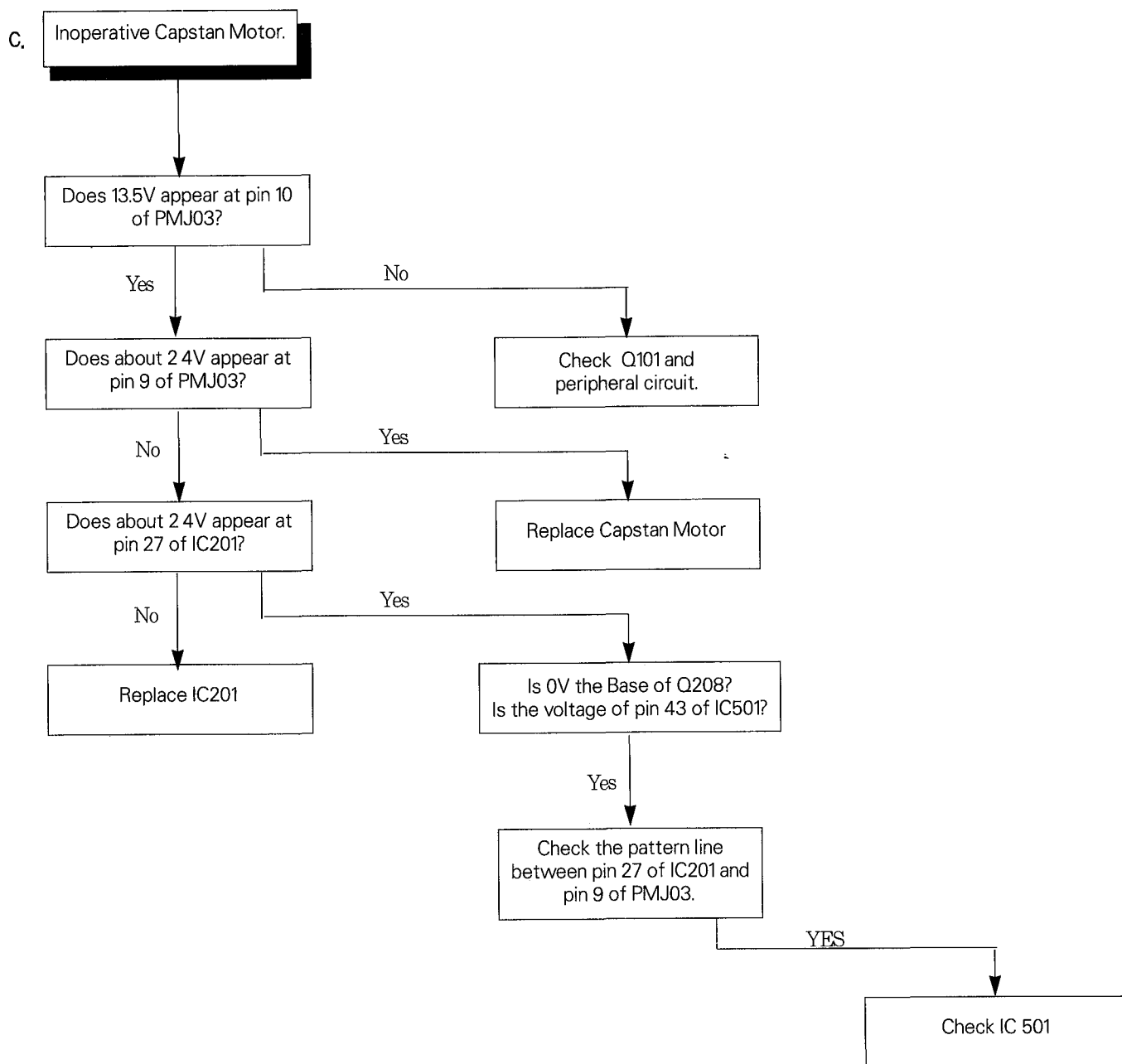
G.

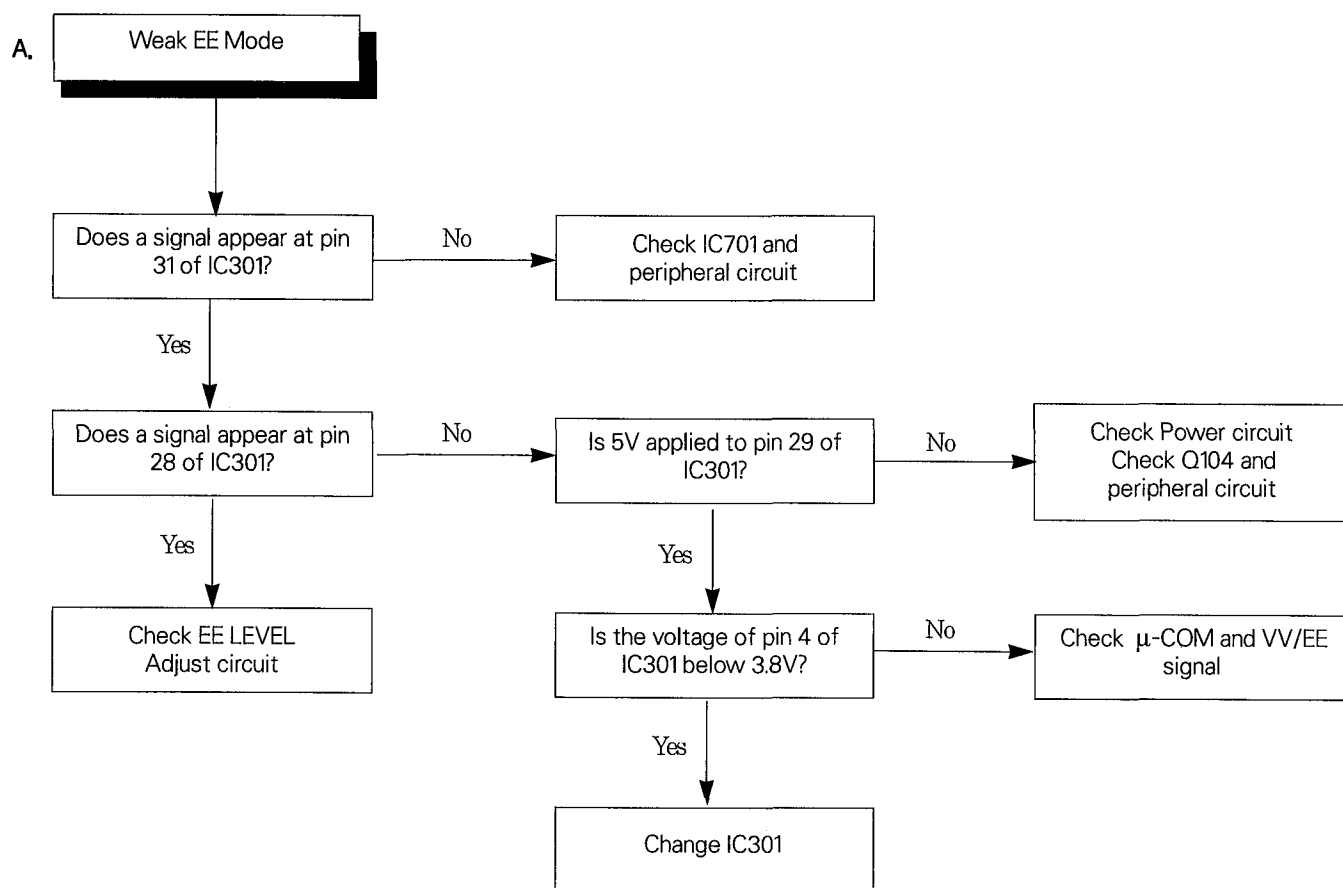


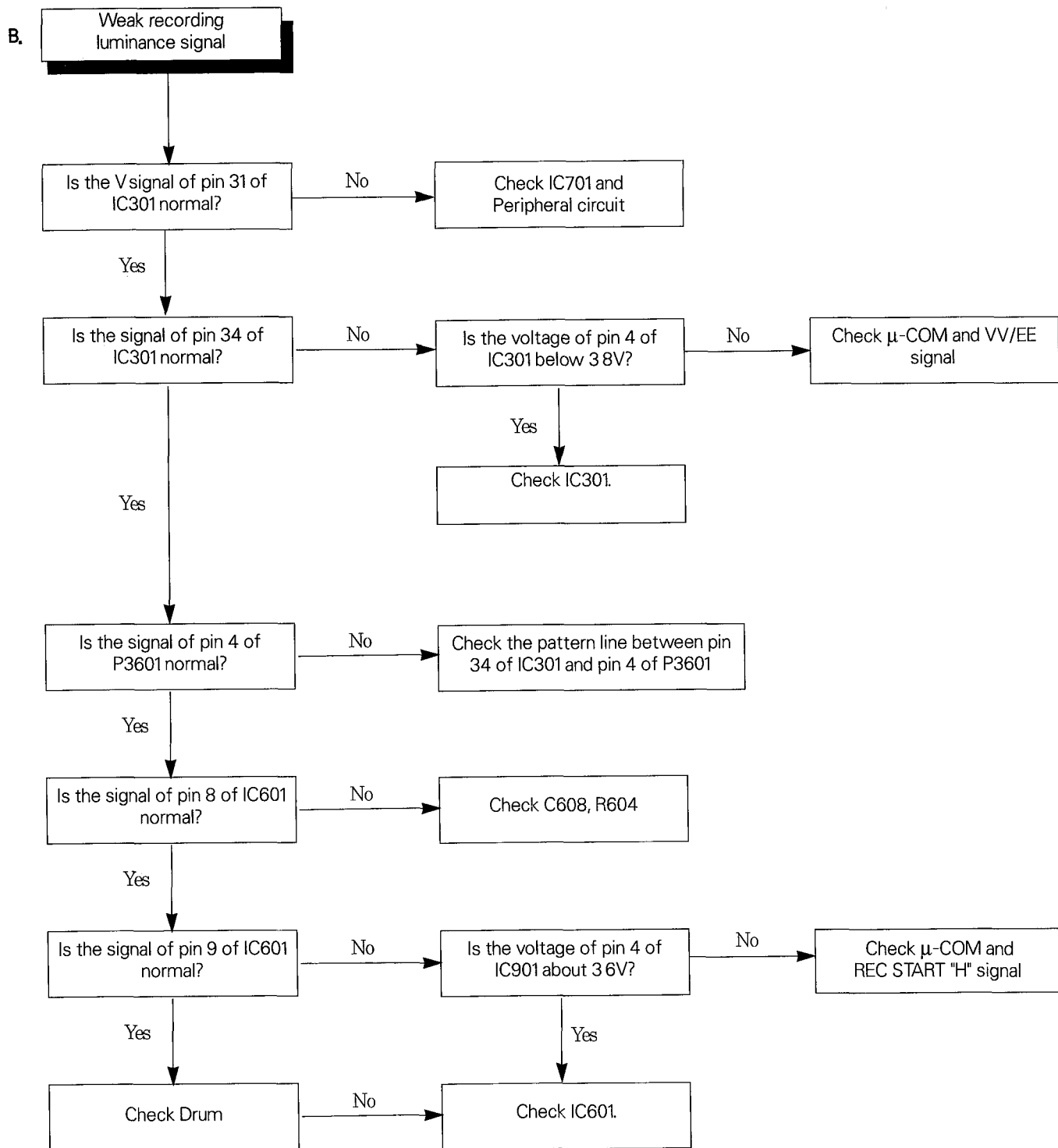
12-4. Servo Circuit







12-5. Y/C Circuit



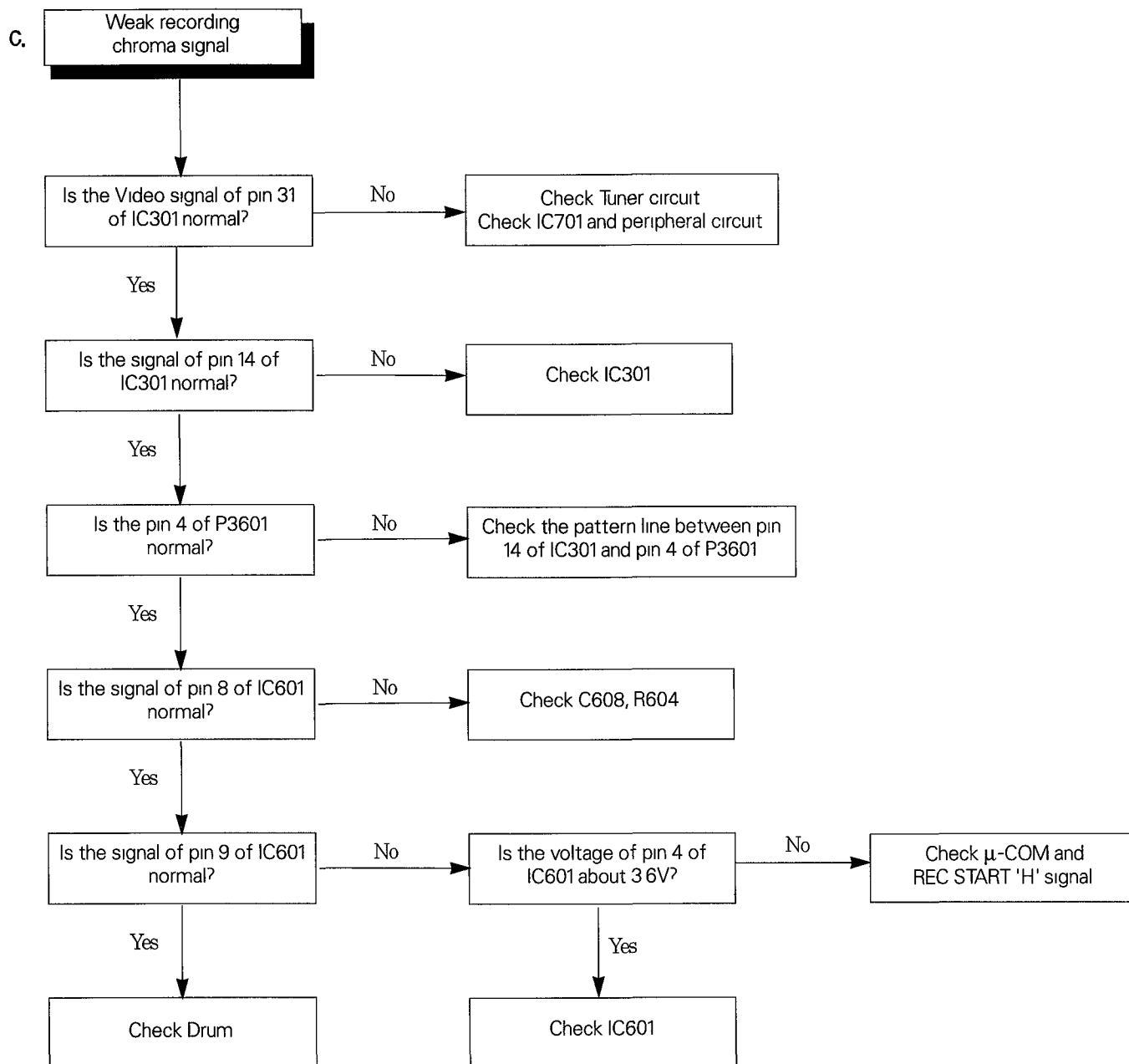


TABLE OF CONTENTS

| Section | Title | Page | Section | Title | Page |
|---|---|------|--|-------|------|
|GENERAL.....4 | | | 5. CIRCUIT ADJUSTMENTS | | |
| 1. GENERAL | | | 5-1. H-Line Adjustment | 32 | |
| 1-1. | Locating the Controls | 4 | 5-2. H-Center Adjustment | 32 | |
| 1-2. | Connecting TV Antenna/Cable | 6 | 5-3. V-Size & V-Center Adjustment | 32 | |
| 1-3. | Using the ON-Screen Menus | 6 | 5-4. Sub-Bright Adjustment | 32 | |
| 1-4. | Turning the cable Mode ON or OFF | 7 | 5-5. AGC Adjustment | 32 | |
| 1-5. | Presetting TV channels | 8 | 6. TROUBLESHOOTING 33 | | |
| 1-6. | Connecting other Equipments | 10 | 7. DIAGRAMS | | |
| 1-7. | Watching TV Programs | 11 | 7-1. Block Diagrams | 36 | |
| 1-8. | Using Convenient Features | 11 | 7-2. Schematic diagrams(13V&20V) | 37 | |
| 1-9. | Adjusting Picture Quality | 12 | 7-3. Circuit Boards Location and Printed Wiring Boards | 43 | |
| 1-10. | Using Noise Reduction Function | 13 | 7-4. Semiconductors | 46 | |
| 1-11. | Using Closed Caption | 13 |VIDEO..... 47 | | |
| 1-12. | Using the Timer-Activated Functions | 14 | 8. DISASSEMBLY | | |
| 1-13. | Playback | 16 | 8-1. Casing & Front Panel Disassembly | 47 | |
| 1-14. | Recording TV programs | 19 | 8-2. Circuit Boards Disassembly | 48 | |
| 1-15. | Index Function | 22 | 9. DISASSEMBLY INSTRUCTIONS 51 | | |
| 1-16. | Troubleshooting | 24 | 10. ADJUSTMENT 68 | | |
|TV..... 25 | | | 11. CIRCUIT ADJUSTMENTS 82 | | |
| 2. DISASSEMBLY | | | 12. TROUBLESHOOTING 84 | | |
| 2-1. | Rear Cover Removal | 25 | 13. DIAGRAMS | | |
| 2-2. | Chassis Assy Removal | 25 | 13-1. Frame Schmetic Diagram | 110 | |
| 2-3. | Service Position | 25 | 13-2. Block Diagrams | 113 | |
| 2-4. | Picture Tube Removal | 25 | 13-3. Circuit Board Location | 118 | |
| 2-5. | Wire Dressing | 26 | 13-4. PCB and Schematic Diagram | 118 | |
| 3. SET-UP ADJUSTMENTS | | | 13-5. Semiconductors | 136 | |
| 3-1. | Beam Landing | 27 |PARTS LIST SECTION137 | | |
| 3-2. | Convergence | 28 | 14. EXPLODED VIEWS | | |
| 3-3. | Focus Adjustment | 30 | 14-1. TV SECTION (13V&20V) | 137 | |
| 3-4. | Screen (G2)..... | 30 | 14-2. VIDEO SECTION | 139 | |
| 3-5. | White Balance Adjustments | 30 | 15. ELECTRICAL PARTS LIST | | |
| 4. SAFETY RELATED CHECK 31 | | | 15-1. TV SECTION | 143 | |
| | | | 15-2. VIDEO SECTION | 148 | |

(CAUTION)

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, DUE TO LIVE CHASSIS THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND \triangle MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

(ATTENTION)

ARRÊTEZ AVOIR DÉCONNECTÉ LE CAP DE L'ANODE, COURT CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHÂSSIS MÉTALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINT SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION!!

AFIN D'ÉVITER TOUT RISQUE D'ÉLECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ÊTRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MAPQUE \triangle SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLODÉES ET LES LISTES DE PIÈCES CONTIENNENT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before relasing the set to the customer

- 1 Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges
- 2 Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors
- 3 Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators
- 4 Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement
- 5 Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement
- 6 Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer
- 7 Check the condition of the monopole antenna (if any). Make sure the end is not broken off and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement
- 8 Check the B+ and HV to see they are at the values specified. make sure your instruments are accurate, be suspicious of your HV meter if sets always have low HV
- 9 Check the antenna terminals, metal trim, 'metallized' knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below

LEAKAGE TEST

The AC leakage from any exposed metal parts to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microamperes). Leakage current can be measured by any one of three methods

- 1 A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers instructions to use these instruments
- 2 A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job
- 3 Measuring the voltage drop across a resistory by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63TRD are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground, the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a coldwater pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the line, the lamp should light at normal brilliance if the screw is a ground potential. (See Fig. B)

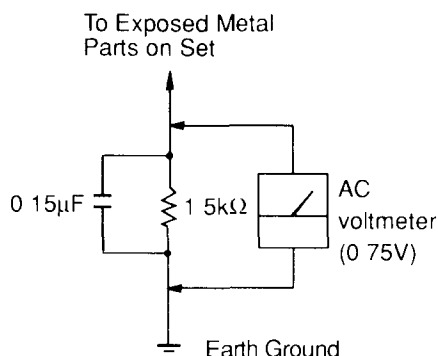


Fig. A Using AC voltmeter to check AC leakage

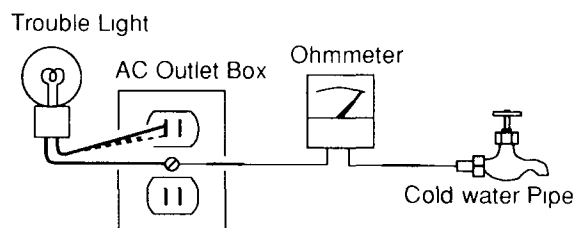
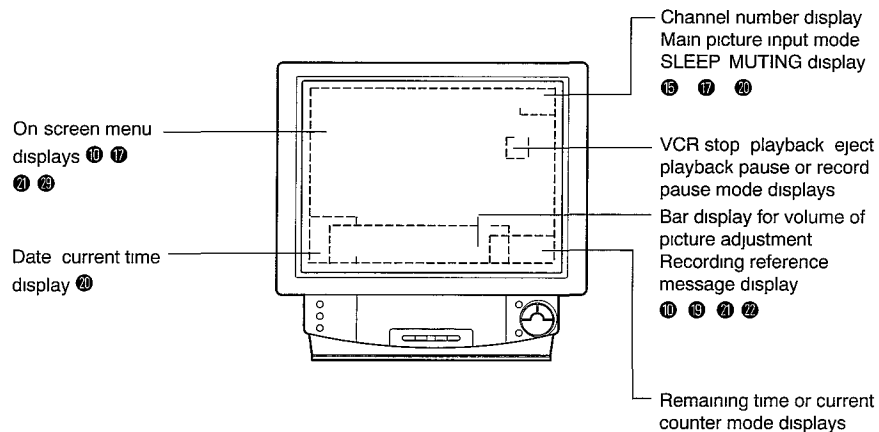


Fig. B Checking for earth ground

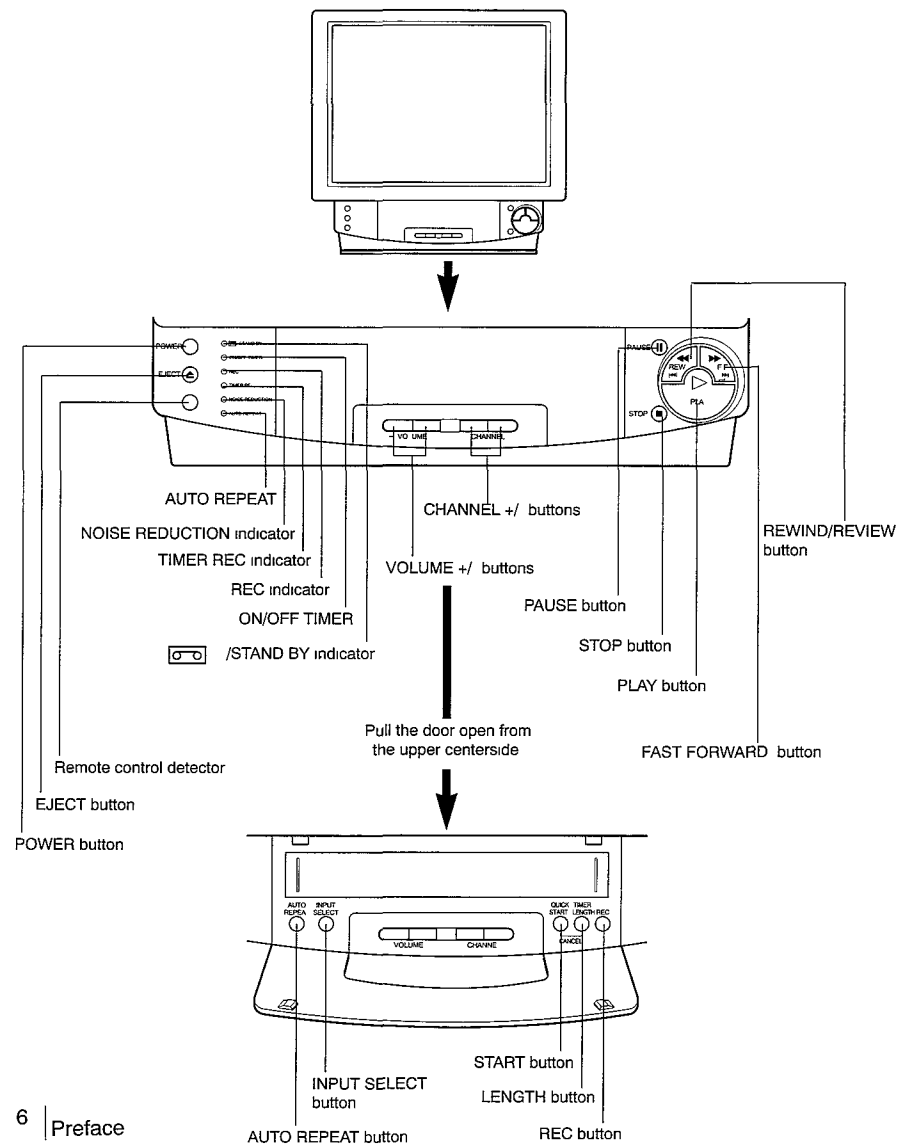
1-1. LOCATING THE CONTROLS

Screen Displays

For details see the pages indicated by the numbered black circles ●



Front Panel

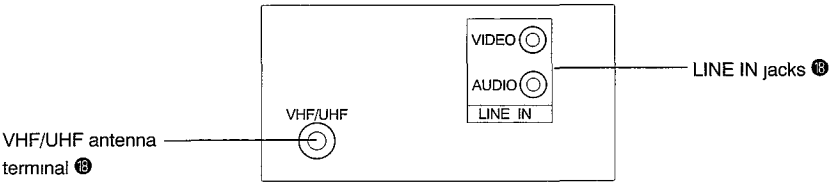


The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

LOCATING THE CONTROLS

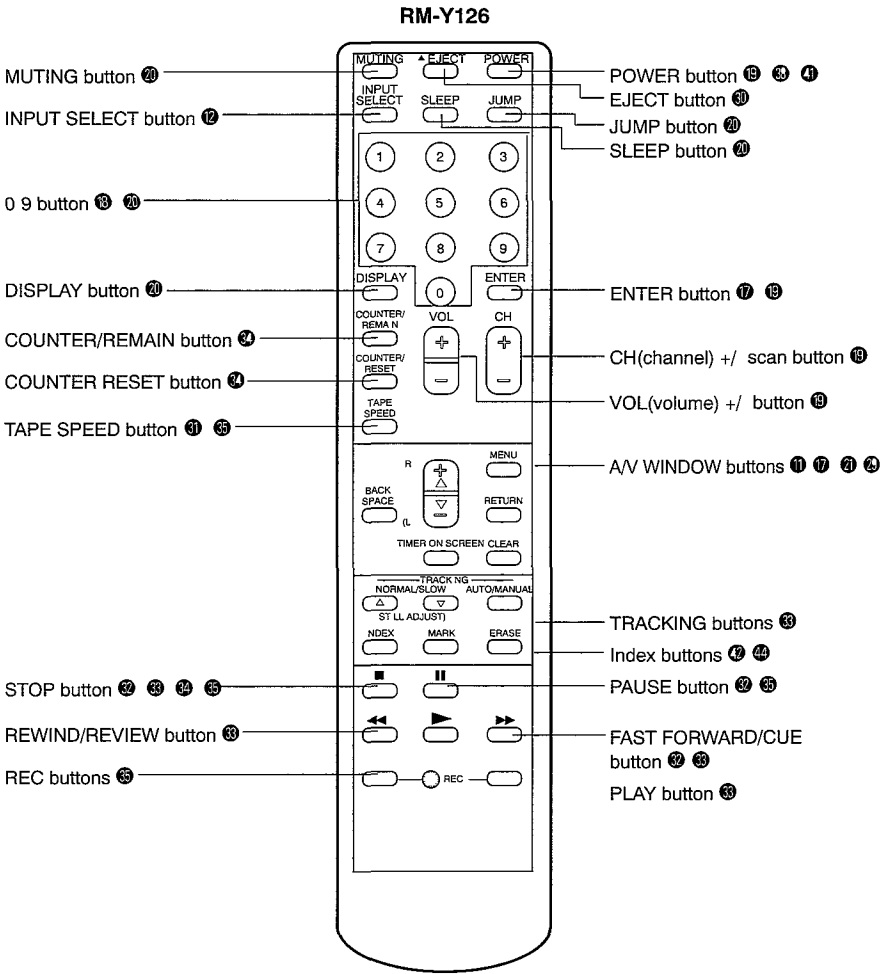
Rear panel

For details see the pages indicated by the numbered black circles ●



Remote Commander

For details see the pages indicated by the numbered black circles ●



WARNING
Batteries may explode if mistreated
Do not recharge, disassemble, or
dispose of in fire

1-2. CONNECTING TV ANTENNA/CABLE

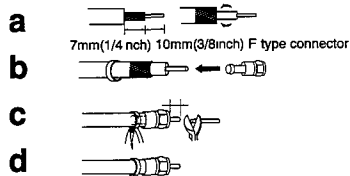
Although you can use either an indoor or outdoor antenna with the VIDEO TV an outdoor antenna will provide you with better picture quality. You can receive cable TV by connecting a cable supplied by your local cable company.

Connecting VHF, UHF or VHF/UHF Combination Antenna, or CATV Cable

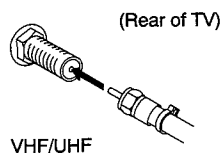
75-ohm coaxial cable (round)

- 1 Check your antenna cable type and prepare the end of the cable using the F type connector

Attach an F-type connector (not supplied)



- 2 Plug the connector into the VHF/UHF terminal at the rear of the VIDEO TV

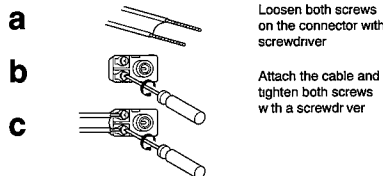


- * Most combination antennas are equipped with a signal splitter. Remove the splitter and attach the appropriate connector.

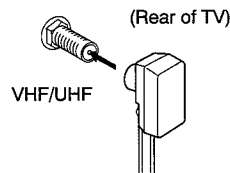
300-ohm twin-lead cable (flat)

- 1 Check your antenna cable type and prepare the end of the cable using the 300 ohm twin lead cable

Attach the supplied antenna connector



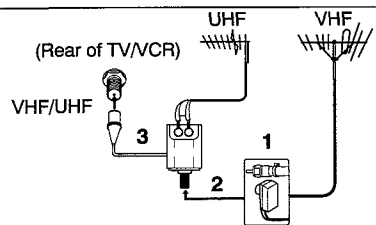
- 2 Plug the connector into the VHF/UHF terminal at the rear of the VIDEO TV



Connecting Both VHF and UHF antennas

Use the EAC 66 U/V mixer (not supplied)

- 1 Prepare the VHF antenna end using the appropriate connector
- 2 Connect the cables to the mixer
- 3 Attach the mixer to the VHF/UHF terminal



When the U/V mixer is used

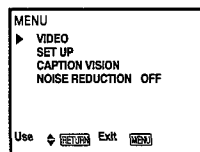
Snow and noise may appear in the pictures when viewing cable TV channels over 37 (W + 1)

1-3. USING THE ON-SCREEN MENUS

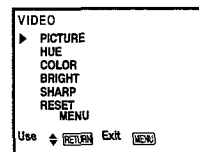
The following flow chart shows the different levels of on-screen menus that you can use to make various adjustments and settings. See the indicated pages for instructions on using each feature.

For picture quality adjustment

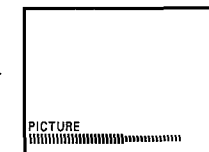
Main menu



VIDEO menu (pp 21-22)

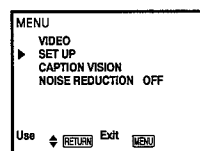


Adjustment bar (pp 23-24)

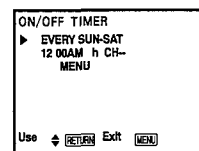
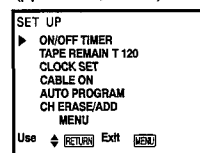


For presetting and other functions

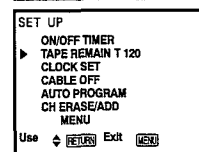
Main menu



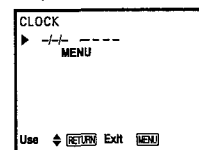
SET UP menu
(pp 14, 19, 27, 31)



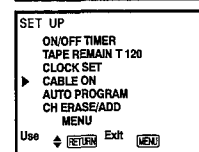
ON/OFF TIMER screen (pp 27-29)



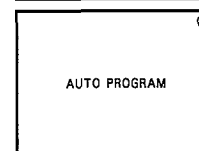
TAPE REMAIN screen (p 34)



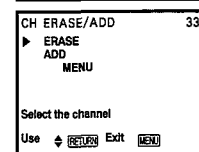
CLOCK SET screen (pp 25-26)



CABLE ON/OFF screen (pp 12)



AUTO PROGRAM screen (pp 13-14)

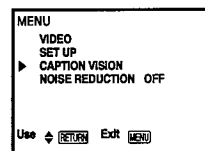


CHANNEL ERASE/ADD screen (pp 15-17)

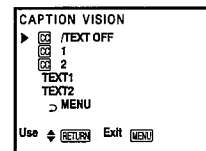
USING THE ON-SCREEN MENUS

For closed caption setting

Main menu



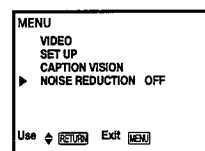
CAPTION VISION menu (p 24)



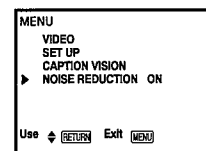
CAPTION VISION screen (p 24)

For noise reduction function

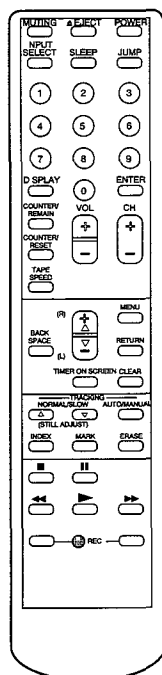
Main menu



NOISE REDUCTION menu (p 23)



NOISE REDUCTION screen (p 23)



RM-Y126

Navigating Through the Menus

To display the main menu

Press MENU

To return to the previous menu

Press Δ + or ∇ to select MENU
Then press RETURN

To return to the main menu

Repeat the above until you reach the main menu

To return to the normal screen

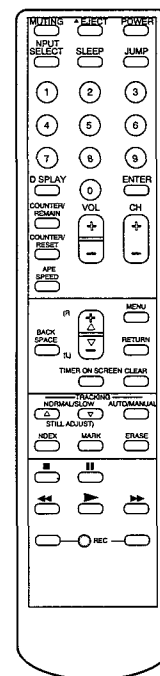
Press MENU on the Remote Commander

Note

The menus disappear automatically if you do not press a button within 60 seconds

1-4. TURNING THE CABLE MODE ON OR OFF

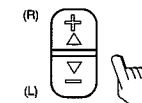
All of the controls are on the Remote Commander



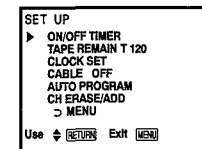
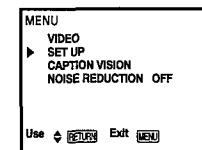
RM-Y126

If you have cable connected to your VIDEO TV (p 10) follow the steps below to turn the cable connection on or off CABLE is preset to OFF when you use your VIDEO TV for the first time Turn CABLE to OFF to preset or watch VHF or UHF channels

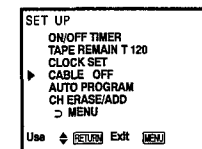
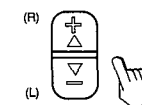
1 Press Δ + or ∇ to select SET UP in main menu



Press RETURN
The SET UP menu appears

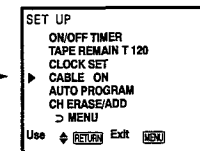
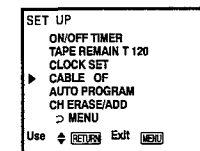


2 Press Δ + or ∇ to select CABLE



3 Press RETURN

Press Δ + or ∇ to select ON or OFF alternately



Press RETURN
The setting is completed

Note

If the VIDEO TV is in LINE mode, you cannot select CABLE Repeatedly press INPUT SELECT to change to TV mode

1-5. PRESETTING TV CHANNELS

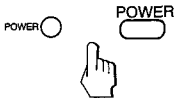
By presetting TV channels to the VIDEO TV, you can select channels by pressing CHANNEL +/- on the VIDEO TV or CH +/- on the Remote Commander

Presetting TV Channels Automatically

Note

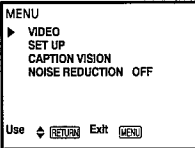
Perform auto programming during the day rather than late at night, when some channels may not be broadcasting

- 1 Press POWER on the VIDEO TV or the Remote Commander to turn the VIDEO TV on

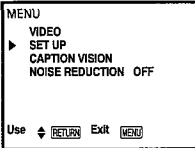
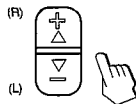


- 2 Turn the cable connection on or off to select the type of channel you want to preset, VHF/UHF or cable TV (Follow the steps in "Turning the Cable Mode On or Off" p 12)

- 3 Press MENU The main menu appears



- 4 Press Δ+ or ▽- to select SET UP

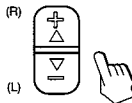


Press RETURN The SET UP menu appears

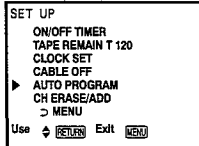
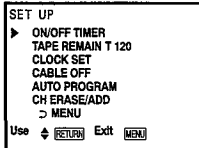
Note

If the VIDEO TV is in LINE mode you cannot select AUTO PROGRAM Press INPUT SELECT to change to TV mode

- 5 Press Δ+ or ▽- to select AUTO PROGRAM



Press RETURN



"AUTO PROGRAM" appears on the screen and receivable channels (other than the channels already preset) are preset in numerical sequence The channels previously preset will not remain in the TV's memory When no more channels can be found the programming stops and the lowest numbered channel is displayed

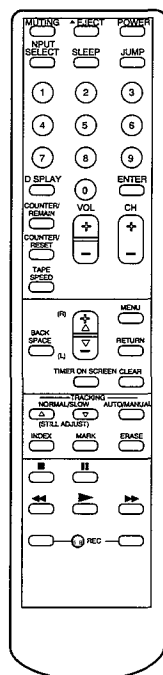
Receivable channels for this TV
VHF 2 13
UHF 14 69
Cable 1 125

To select TV channels without presetting
Press 0-9 and ENTER

To return to the normal screen
Press MENU

To erase unnecessary channels, or to add channels that could not be preset automatically because their signal was too weak follow the steps in "Erasing Unnecessary Channels CHANNEL ERASE" and "Presetting Only Desired Channels CHANNEL ADD" (pp 15 17)

PRESETTING TV CHANNELS

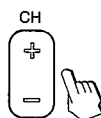


RM-Y126

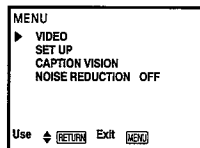
Erasing Unnecessary Channels-CHANNEL ERASE

Use this feature to erase unnecessary TV channels so that when you press CH+/- the channel(s) are skipped

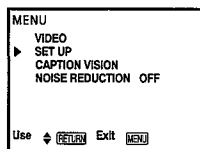
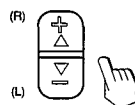
- 1 Press POWER on the VIDEO TV or the Remote Commander to turn the VIDEO TV on



- 2 Press MENU
The main menu appears



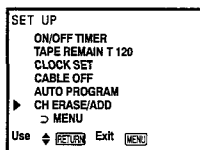
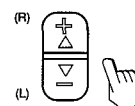
- 3 Press Δ+ or ∇ to select SET UP



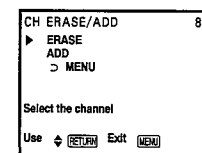
Press RETURN
The SET UP menu appears



- 4 Press Δ+ or ∇ to select SET UP



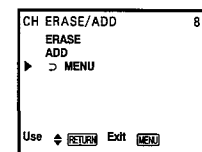
- 1 Press RETURN
The CH ERASE/ADD screen appears and the cursor points to ERASE



Note

If the VIDEO TV is in LINE mode you cannot select CHANNEL ERASE/ADD Press INPUT SELECT to change to TV mode

- 5 Press RETURN
A " " sign appears in front of the channel number display showing that the channel is erased from the channel scan memory



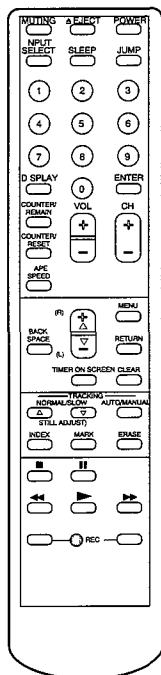
- 6 Press MENU



The next time you press the CH +/- buttons channel 8 will be skipped

To erase other channels
Repeat steps 1 6

PRESETTING TV CHANNELS

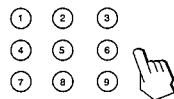


RM-Y126

Presetting only Desired channels - CHANNEL ADD

Use this feature to add channels one by one to the channel scan memory

- 1 Press 0 9 and ENTER to select the channel you want to add For example to add channel 25, Press 2 5 and ENTER

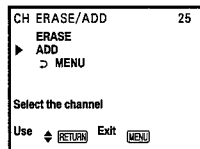
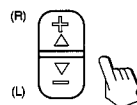


- 2-4 (Follow steps 2 4 in 'Erasing Unnecessary Channels CHANNEL ERASE" pp 15 16)

Note

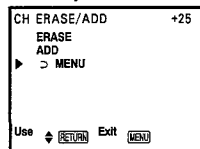
If the TV is in LINE mode you cannot select CH ERASE/ADD Press INPUT SELECT to change to TV mode

- 5 Press Δ + or ∇ - to select ADD



Press RETURN

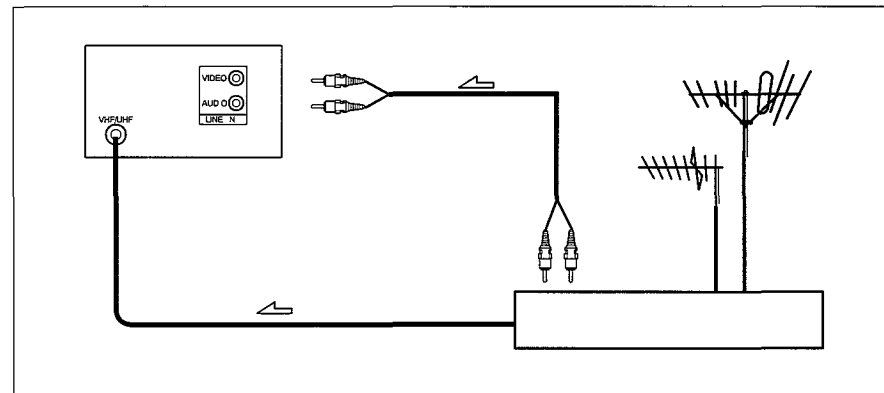
A "+" sign appears in front of the channel number display showing that the channel is added to the channel scan memory



- 5 Press MENU

To add other channels
Repeat steps 1 6

1-6. CONNECTING OTHER EQUIPMENTS



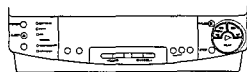
- 1 Remove the coaxial cable from your VIDEO TV and place it into the antenna terminal on the other audio/video source Then connect a 75 ohm coaxial cable with F type connector (not supplied) to the VHF/UHF antenna terminal at the rear of VIDEO TV

- 2 Remove the coaxial cable from your VIDEO TV and place it into the antenna terminal on the other audio/video source Then connect a 75-ohm coaxial cable with F type connector (not supplied) to the VHF/UHF antenna terminal at the rear of VIDEO TV

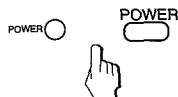
Notes

- Repeatedly press INPUT SELECT on the VIDEO TV or on the Remote Commander so that "LINE" appears on the screen
- To return to TV mode repeatedly press INPUT SELECT on the VIDEO TV or on the Remote Commander so that a channel number appears on the screen
- For operating instructions refer to the instruction manual furnished with the VCR
- If the picture or sound is affected, move the VCR away from the VIDEO TV

1-7. WATCHING TV PROGRAMS



- 1 Press **POWER** on the VIDEO TV or the Remote Commander to turn the TV on



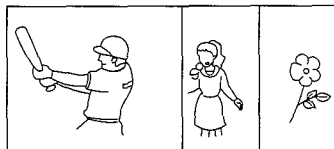
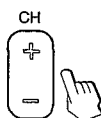
- 2 Turn the cable mode on or off to select the type of channel you want to watch VHF/UHF or cable TV
(Follow the steps in Turning the Cable Mode On or Off p 12)

If "LINE" is displayed on the screen press **INPUT SELECT** on the Remote Commander so that the channel number appears

- 3 Select a channel in one of the following two ways

To scan the preset channels* in numerical sequence

Press **CH +/-**

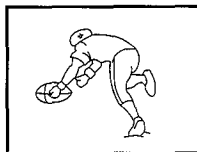


* For more information on presetting channels see pp 13 17

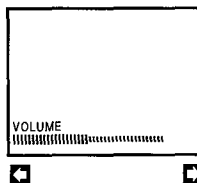
To select a channel directly

Press **0 9** and **ENTER**

For example, to select channel 14 press **1 4** and **ENTER**



- 4 Press **VOL +/-** to adjust the volume



To turn off the TV

Press **POWER** on the TV or the Remote Commander again

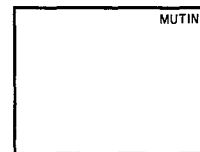
Press **VOL +** to increase the volume
Press **VOL -** to decrease the volume

1-8. USING CONVENIENT FEATURES

Muting the Sound-MUTING

Press **MUTING**

The display 'MUTING' will appear on the screen



To restore the sound

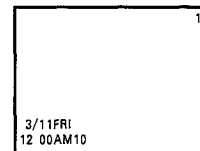
Press **MUTING** again

Keeping the Displays On-Screen - DISPLAY

To display the channel

Press **DISPLAY**

All the existing displays appear channel number date time VCR operating mode and tape counter



To cancel the display

Press **DISPLAY** again

The display will disappear

Setting the Sleep Timer - SLEEP

The sleep timer turns off the TV automatically after the amount of time you select

Press **SLEEP**

Each time you press **SLEEP** the time increments 30 60 90 and OFF mode appear in sequence



| | |
|--------------|------------|
| SLEEP | 30 |
| SLEEP | 60 |
| SLEEP | 90 |
| SLEEP | OFF |

The **SLEEP** display appears about one minute before the TV turns off

To cancel the setting

Press **SLEEP** until OFF mode appears

The "SLEEP OFF" display appears for about three seconds

OR

Turn the TV off

The sleep timer setting is cancelled

Switching Quickly Between Two Channels - JUMP

Press **JUMP** once to recall the channel you were watching previously Press **JUMP** again to switch back Use this feature to keep track of two programs alternately

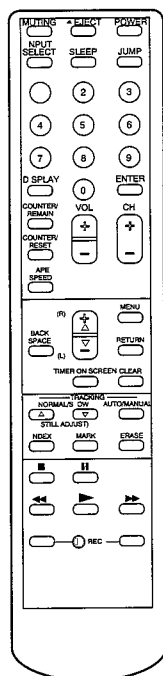


1-9. ADJUSTING PICTURE QUALITY

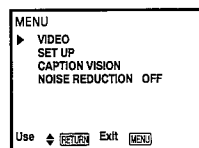
You can adjust the picture for each input mode (TV mode, LINE) by pressing INPUT SELECT to select the input mode before making the adjustments. These adjustments are retained in memory even when you turn off the TV until you change the adjustments again.

1 Press MENU

The main menu appears and the cursor points to VIDEO

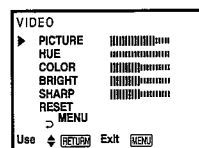


RM-Y126



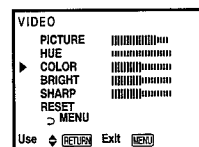
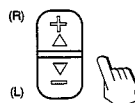
2 Press RETURN

The VIDEO menu appears

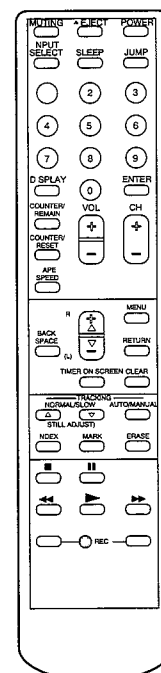
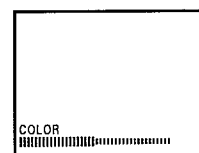


3

Press Δ + or ∇ to select the item you want to adjust. For example, to adjust the picture color, select COLOR.



Press RETURN. The adjustment bar appears.

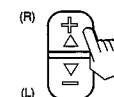


RM-Y126

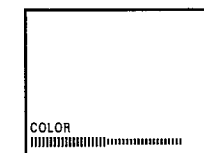
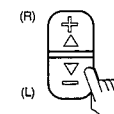
To return to the normal screen
Press MENU

To restore the factory (mid-level) setting
Go to the VIDEO menu and select RESET by pressing Δ + or ∇ . Then press RETURN. All the settings except for PICTURE will be restored to mid level settings.

4 Press Δ + or ∇ to make the adjustment

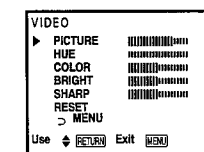


Increase color intensity \blacktriangleright



\blacktriangleleft Decrease color intensity

Press RETURN. The new setting appears in the VIDEO menu.

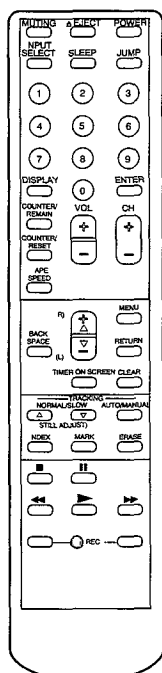


To adjust other items
Repeat steps 3-4

| | Press ∇ - to | Press Δ + to |
|---------|---|--|
| PICTURE | decrease picture contrast with soft color | increase picture contrast with vivid color |
| HUE | make skin tones become purplish | make skin tones become greenish |
| COLOR | decrease color intensity | increase color intensity |
| BRIGHT | darken the picture | brighten the picture |
| SHARP | soften the picture | sharpen the picture |

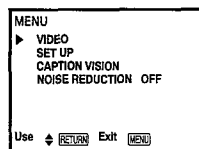
1-10. USING NOISE REDUCTION FUNCTION

You can reduce the picture noise on the screen in playback mode

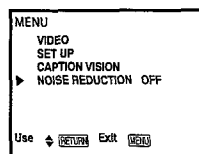


RM-Y126

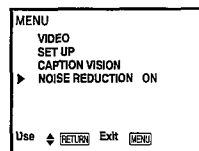
- 1 Press MENU
The main menu appears, and the cursor points to VIDEO



- 2 Press Δ + or ∇ to select NOISE REDUCTION



- 3 Press RETURN then Δ + or ∇ to select ON
NOISE REDUCTION Indicator lights up



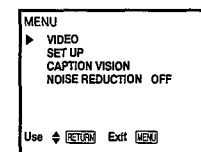
- 4 Press RETURN
The picture noise is reduced

Note

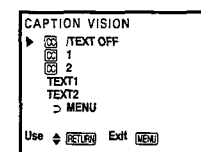
Captions may appear with a white box or another error instead of a certain word Poor reception of TV programs can also cause errors in Closed Caption

1-11. USING CLOSED CAPTION

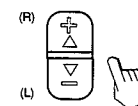
- 1 Press MENU
The main menu appears



- 2 Press RETURN
The VIDEO menu appears



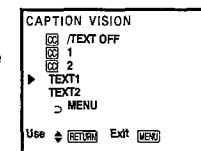
- 3 Press Δ + or ∇ to select closed caption mode



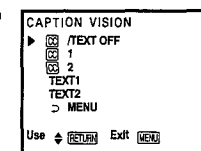
Select CC1 or CC2 to view Captions
A Caption is a printed version of the dialogue or sound effects of a program (The mode should be set to CC1 for most programs)



Select TEXT1 or TEXT2 to view Text
Text is information that is presented using the half to full television screen
It is usually not related to the program



Select CC/TEXT OFF if you do not want to use the CAPTION VISION mode



- Press RETURN
The Setting is completed



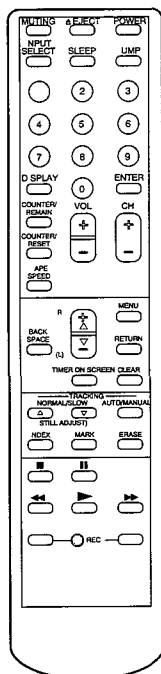
1-12. USING THE TIMER-ACTIVATED FUNCTIONS

Setting the Clock - CURRENT TIME SET

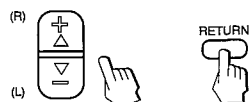
Follow these instructions to set the current time. The correct time must be set in order to use the other timer activated functions (ON/OFF TIMER).
EXAMPLE.

Set the time to 11 30AM Friday on the 25th of February 1994

- In main menu press Δ or ∇ to select SET UP
Then press RETURN
The SET UP screen appears

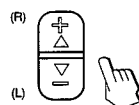


RM-Y126



SET UP
▶ ON/OFF TIMER
TAPE REMAIN T 120
CLOCK SET
CABLE ON
AUTO PROGRAM
CH ERASE/ADD
▷ MENU
Use Δ RETURN Exit MENU

- Press Δ or ∇ to select CLOCK SET



Press RETURN
The CLOCK SET screen appears

SET UP
▶ ON/OFF TIMER
TAPE REMAIN T 120
CLOCK SET
CABLE ON
AUTO PROGRAM
CH ERASE/ADD
▷ MENU
Use Δ RETURN Exit MENU

CLOCK
▶ / /
▷ MENU
Use Δ RETURN Exit MENU

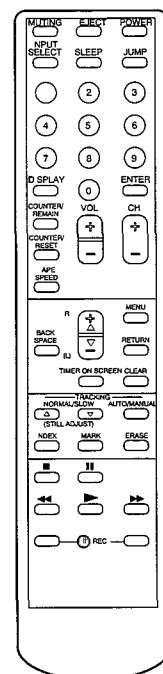
- Press RETURN again
Set the month appears on the screen



CLOCK
1/ /
▷ MENU
Set the month
Use Δ RETURN Exit MENU

- Press Δ or ∇ to set the month
Each time you press Δ or ∇ the month changes in sequence

CLOCK
2/ /
▷ MENU
Set the month
Use Δ RETURN Exit MENU



RM-Y126

To display the time

Press DISPLAY

To return to the normal screen

Press MENU

Notes

- The internal clock of this VIDEO TV operates on a 12 hour cycle

12 00 AM stands for midnight
12 00 PM stands for noon

- All the settings including CLOCK will be erased if you unplug the VIDEO TV or a power failure occurs. Reset the current time by following steps 1-8.
- If the ON/OFF TIMER or QUICK TIMER has been set, you can not change the clock. To change the clock, cancel the ON/OFF TIMER (P 29) or QUICK TIMER (P 41) first.

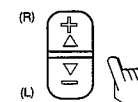
Press RETURN

Set the day appears on the screen



CLOCK
2/1/
▷ MENU
Set the day
Use Δ RETURN Exit MENU

- Press Δ or ∇ to set the day
Each time you press Δ or ∇ the day changes consecutively



CLOCK
2/25/ FRI
▷ MENU
Set the year
Use Δ RETURN Exit MENU

Press RETURN
Set the year appears on the screen

- Press Δ or ∇ to set the year
Each time you press Δ or ∇ the year changes in sequence and the day of the week automatically changes

Press RETURN
Set the time appears on the screen

CLOCK
2/25/94 FRI 12 00AM
▷ MENU
Set the time
Use Δ RETURN Exit MENU

- Press Δ or ∇ to set the hour
Each time you press Δ or ∇ the hour changes in sequence starting with "12 00AM"

Press RETURN

CLOCK
2/25/94 FRI 11 00AM
▷ MENU
Set the time
Use Δ RETURN Exit MENU

- Press Δ or ∇ to set the minute
Each time you press Δ or ∇ the minute changes in sequence

Press RETURN
The setting is completed and the clock starts

CLOCK
2/25/94 FRI 11 30AM
▷ MENU
Use Δ RETURN Exit MENU

To change or correct the setting before completing it
Press BACK SPACE to return to the item to be erased

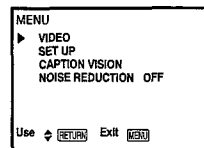
USING THE TIMER-ACTIVATED FUNCTIONS

Setting the ON/OFF TIMER

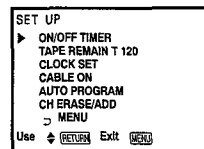
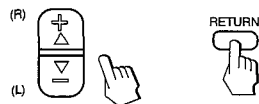
With this function you can set your favorite program to appear on the screen at the time that you set

EXAMPLE Set the timer to turn on the VIDEO TV every Monday through Friday at 3 15 PM for 2 hours on channel 21

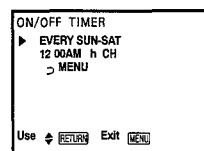
- 1 Press MENU
The main menu appears



- 2 Press Δ + or ∇ to select SET UP
Then press RETURN
The SET UP menu appears and the cursor points to ON/OFF TIMER



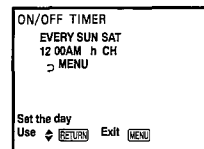
- 3 Press RETURN
The ON/OFF TIMER screen appears



Notes

If the ON/OFF TIMER display does not function, the current time has not been set and you cannot select ON/OFF TIMER To set the clock see Setting the Clock CURRENT TIME SET pp 25 26

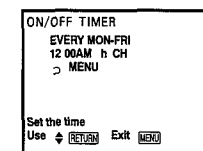
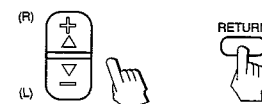
- 4 Press RETURN again
Set the day appears on the screen



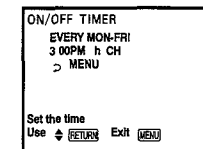
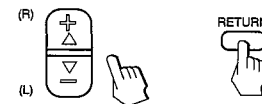
- 5 Press Δ + or ∇ to set the day
Each time you press Δ + or ∇ the days of the week change as shown in Fig 1

Then press RETURN

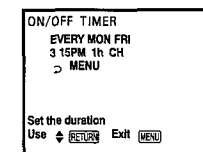
"Set the time" appears on the screen



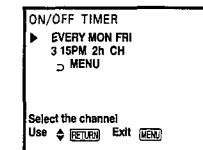
- 6 Press Δ + or ∇ to set the hour that you want the TIMER to start
Each time you press Δ + or ∇ the hour changes in sequence
Then press RETURN



- 7 Press Δ + or ∇ to set the minutes
Each time you press Δ + or ∇ the minutes change in sequence
Then press RETURN
Set the duration appears on the screen

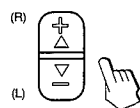


- 8 Press Δ + or ∇ to set the duration of time
Each time you press Δ + or ∇ the duration changes from "1" to "9" in sequence
Then press RETURN
"Select the channel" appears on the screen



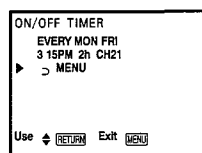
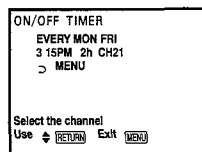
USING THE TIMER-ACTIVATED FUNCTIONS

- 9 Press Δ + or ∇ to set the channel that you want the TV to tune in
Each time you press Δ + or ∇ the channel number changes in sequence



Press RETURN

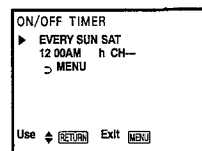
The setting is completed and the ON/OFF TIMER indicator on the front of the VIDEO TV lights up



Cancelling the ON/OFF TIMER

- 1 Select the ON/OFF TIMER SCREEN (Refer to P 27)
EVERY SUN SAT will be displayed in red

- 2 Press BACK SPACE to erase the ON/OFF TIMER



To change or correct the setting before completing it
Press BACK SPACE to return to the item to be erased

To return to the normal screen
Press MENU

Notes

- One minute before the timer goes off, the TV will turn off" display will appear on the screen
- If you have not set the clock correctly, the ON/OFF TIMER will not operate at the proper time To set the clock see Setting the Clock CURRENT TIME SET" pp 25 26
- All the settings including ON/OFF TIMER will be erased if you unplug the VIDEO TV or a power failure occurs Reset the TIMER by following steps 1 9

Fig 1 Selecting the day(s) of the week

When you press Δ + the days of the week appear in the

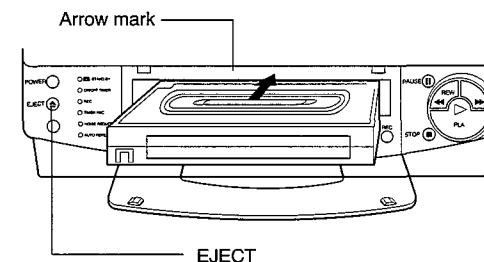


(∇ reverse order)

1-13. PALY BACK

Inserting Video Cassette

- 1 Insert a video cassette with the arrow mark facing upwards



- 2 Gently press the center of the front side of the cassette until the mechanism draws it into the compartment
When the cassette has been inserted, the \square / STAND BY indicator lights and the VIDEO TV turns on automatically

Note

When you insert a cassette without a safety tab playback starts automatically (AUTO PLAYBACK function)

Ejecting the cassette

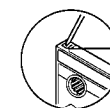
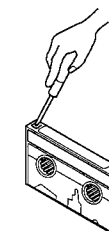
Press EJECT

You can also eject the cassette when the power is off

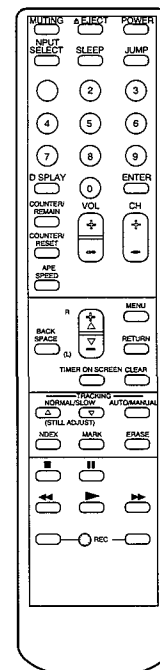
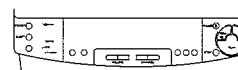
Protecting your cassette against accidental erasure

The cassette is provided with a safety tab to protect against accidental recording

Break off the safety tab with a screwdriver or other suitable tool
If the safety tab is removed, the cassette will be ejected when you try to record on the cassette



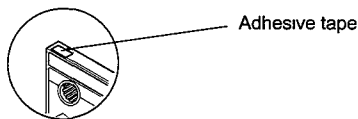
Safety tab



RM-Y126

PALY BACK

To record on a cassette with the safety tab broken off simply cover the tab hole with adhesive tape



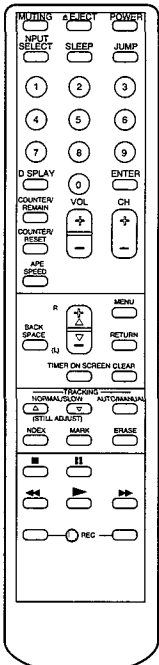
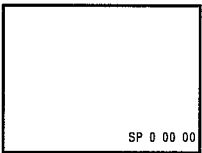
Maximum recording time of a tape

The quality of tape you use greatly affects record/playback quality and the life of the VIDEO TV Use only cassette tapes that have the official VHS logo High grade tapes give the best results especially at the EP speed They also have a better oxide coating that helps prevent dirty video heads Although T 160 tapes offer the longest recording time they contain thinner tape that is more likely to stretch or cause tape jams We suggest that you use T 120 or shorter tapes

Recording in the SP LP or EP mode is possible with this unit When recording select the desired recording mode (SP LP or EP) with TAPE SPEED on the Commander During playback the unit automatically detects the recording format, and then plays back the tape in the appropriate mode

The following chart shows the maximum recording times for T 60 T 120 and T 160 tapes at the three recording speeds

| Speed | T-60 | T-120 | T-160 |
|-------|--------------------------|--------------------------|------------------------------|
| SP | 1 Hour (60 Minutes) | 2 Hours (120 Minutes) | 2 2/3 Hours (160 Minutes) |
| LP | 2 Hours (120 Minutes) | 4 Hours (240 Minutes) | 5 1/3 Hours (320 Minutes) |
| EP | 3 Hours (180 Minutes) | 6 Hours (360 Minutes) | 8 Hours (480 Minutes) |



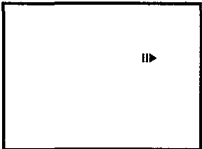
RM-Y126

Playing Back a Prerecorded Cassette Tape

- 1 Insert a prerecorded cassette into the tape compartment The VIDEO TV automatically turns on
- 2 If playback does not start press PLAY ► The tape plays back at the speed at which was recorded

To stop playback

Press STOP ■



To stop playback for a moment

Press PAUSE ||

|| appears on the screen and image will stop

To resume playback press PAUSE || or PLAY ►

|| appears on the screen



When the tape is played back to the end

The tape is automatically rewound to the beginning (auto rewind) The power remains on

To rewind the tape to its beginning and to playback automatically (Auto Playback Function)

Press AUTO REPEAT on the VIDEO TV during playback or stop mode The AUTO REPEAT indicator lights and until you press the button again to release AUTO REPEAT function the auto playback will continuously work

Variable Speed Playback

You can enjoy playing back pictures in variable speeds on the VCR

Still Picture

During playback mode press PAUSE || To resume normal playback press PLAY ► or PAUSE ||

Note

- No sound accompanies the picture which may be unstable or have video "noise" in it This is normal
- If the VCR is left in the pause mode for more than about 5 minutes

PALY BACK

To advance the tape rapidly

While the tape is being played back pressing FAST FORWARD will move the tape forward at high speed so you can see the picture and choose where to stop When you do this [] appears on the screen
If you release the button the VCR will return to normal playback
When tape is not being played back and the VCR is in the stop mode pressing FAST FORWARD winds the tape forward at very high speed without displaying the picture
When you do this [] appears on the screen
You can stop the forward running of the tape at any time by pressing STOP ■
If during the operation the tape rewinds forward to the end the machine will automatically stop and then rewind the tape back to the beginning again

To rewind the tape rapidly

If you press REWIND/REVIEW while the tape is being played back you can play the tape backwards to find a particular spot When you do this [] appears on the screen and the tape will be rewound at very high speed At the end ■ appears on the screen and invite you to press PLAY ▶

Viewing TV Programs During Tape Playback

While a tape is being played you can switch to watching TV broadcasts Press STOP ■
The VIDEO TV returns to normal TV reception mode

Playing Back a tape recorded on another VCR

When playing back a tape recorded on another VCR there might be some picture noise Tracking ensures that the tape is correctly aligned with the playback head It only works in the "playback" mode and its principle purpose is to minimize picture shake and what is called "noise" (fuzzy lines across the picture during playback and still picture)
It is adjusted either automatically or manually

Automatic tracking adjustment function

When playback starts the auto tracking automatically adjusts the picture "AUTO TRACKING" flashes for 5 seconds

The automatic tracking control is activated in the following conditions

- When the cassette is inserted for the first time
- When the recording mode on the playback tape is switched from SP to EP and back again
- When the picture is distorted by scratches on the tape
- When TRACKING AUTO/MANUAL is pressed after the picture is adjusted manually

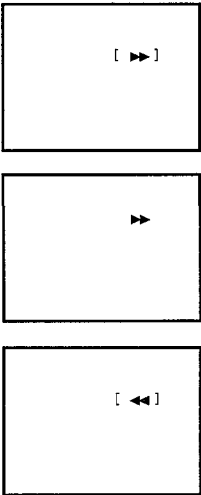
If auto tracking does not work, the tracking was probably last adjusted manually

Adjusting the tracking manually

When the playback picture proves to have streaks or snow during normal playback adjust the picture manually with TRACKING NORMAL/SLOW (STILL ADJUST)
Press either Δ or ▽ to obtain the best possible picture When playing back a tape recorded on another VCR the tracking condition is automatically adjusted on this VCR

Note

- Auto tracking adjustment may be impossible when the recording condition of the tape is poor
- During auto tracking adjustment, streaks or noise may appear



Using COUNTER/REMAIN

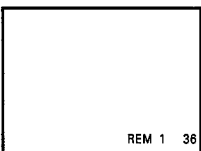
To display the counter press COUNTER /REMAIN once
The tape counter shows the tape travel time in hours minutes and seconds during recording or playback



Note

For seeing the remaining tape time first check the tape mode If you want to see the remaining tape time in T 120 press RETURN then Δ+ or ▽ until T 120 appears in TAPE REMAIN screen For OTHERS, press the button until OTHERS appears

To see the remaining tape time during recording or playback press COUNTER/REMAIN twice
The remaining tape time appears with REM

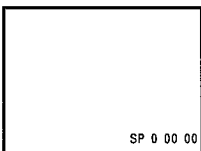


Using Counter Memory Function

The counter memory makes it easy to return to a particular spot on the tape after recording or playback The tape stops when the counter reaches SP 0 00 00 This feature is especially helpful when editing a recording

1 Press COUNTER/REMAIN to see the counter

2 Start recording or playback and press COUNTER RESET at the point you want to return to
The counter displays SP 0 00 00

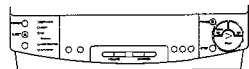


3 Press STOP ■ when you finish recording or playing the tape

4 Press REWIND/REVIEW while the tape is stopped
The tape stops at SP 0 00 00

5 Press PLAY ▶ to play the tape

1-14. RECORDING TV PROGRAMS



Recording TV Programs

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission and/or program owner.

- 1 Insert a cassette with the safety tab.
The VIDEO TV turns on automatically (Auto power on).
- 2 Select the recording tape speed: SP, LP or EP with TAPE SPEED.
- 3 Select the channel to be recorded with CHANNEL +/- or 0-9 buttons and ENTER.
- 4 Press the two REC buttons on the Commander at the same time or the REC button on the unit.
The REC indicator lights.

To stop recording

Press STOP ■.

Temporarily to stop recording at a particular point

Press PAUSE || to eliminate unwanted station breaks or program material while recording a TV program.

REC || appears on the screen.

To resume recording, press PAUSE || again.

When the recording pause mode lasts for more than approximately 5 minutes, the unit enters the stop mode.

Note

When the tape reaches its end

The tape rewinds to the beginning. The power will remain on.

Recording a Program Without Watching the TV

Turn off the power of the TV.

There will be no interference with the recording.

You cannot watch another program while recording one program.

RM-Y126

TIMER RECORDING

You can preset up to six recordings up to one month in advance. The recordings can be preset with the Commander while referring to the TIMER SET/CHECK display on the screen.

Before you begin, check the following points:

- The date and clock must be set correctly. (See "Setting the Clock" on pp. 25-26)
- Make sure that the cassette tape is long enough to record all the programs.
- Make sure that the safety tab on the cassette is not broken off.

Recording from today to one month later

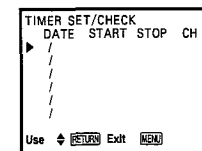
If today is August 31st, you can set the timer to record a program broadcast between today and September 30 (for 31 days). If today is January 31st, you can set the timer to record a program broadcast between today and February 28th (for 29 days). A leap year is automatically considered.

Setting the Timer

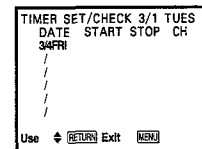
Example: Suppose you want to record a program broadcast on channel 26 from 9:00 PM on Thursday, March 10 in EP mode. Note that 12:00 AM is midnight and 12:00 PM is noon.

- 1 Press **TIMER ON SCREEN**.
The TIMER SET/CHECK menu appears.


TIMER ON SCREEN



- 2 Press **RETURN**.
Make sure that today's date is flashing.
If not, reset the correct time. See "Setting the Clock" on pp. 25-26.



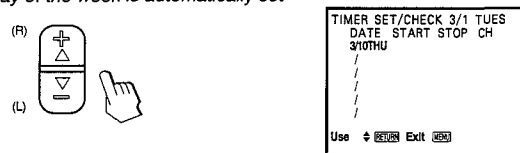
Note

During timer recording,  / STAND BY indicator flashes.

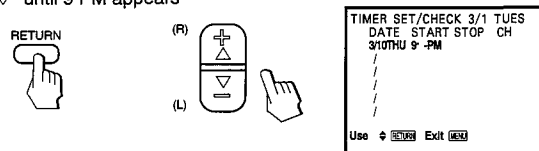
RM-Y126

TIMER RECORDING

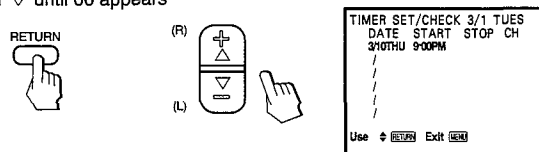
- 3** Press Δ + or ∇ to set the month and date to 3/10 THU
The day of the week is automatically set



- 4** Press RETURN to flash the hours section under "START" then Δ + or ∇ until 9 PM appears



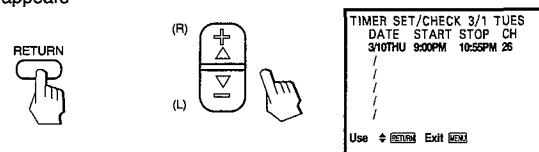
- 5** Press RETURN to flash the minute section under "START" then Δ + or ∇ until 00 appears



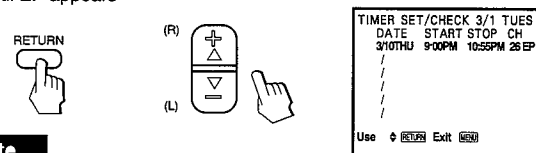
- 6** Press RETURN
The hours section flashes under "STOP" Set the turn off time referring to steps 4 and 5



- 7** Press RETURN to flash the CH position then Δ + or ∇ until 26 appears



- 8** Press RETURN to flash the recording speed position then Δ + or ∇ until EP appears



Note

The AT (AUTO SPEED) mode starts recording at the SP speed but if it determines there isn't enough tape left to complete the programmed recording, it switches to the EP speed

- 9** Press RETURN to store the setting



- 10** After you finish programming press POWER to turn off the VIDEO TV
The **TIMER REC** indicator lights

To change or correct the setting before completing it

Press BACK SPACE to return to the item to be changed

To preset another program

Move the cursor to the second line after step 9 and repeat steps 2 to 10

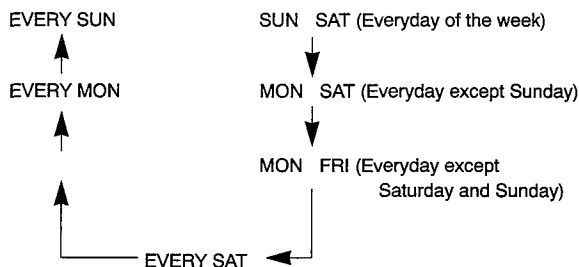
Daily/Weekly Recording

You can preset the timer activated recording to the same program everyday of the week (Daily recording) or one day of the week (Weekly recording)

Follow steps 1 through 2 in "Setting the Timer" on page 36

You can select the following programs

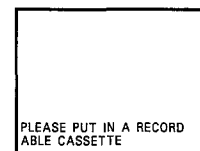
Each time you press ∇ the indication under "DATE" on screen changes in the following order



Notes

The following messages under each case appear on the screen

- "PLEASE PUT IN A RECORDABLE CASSETTE"



When switched to stand by mode for timer recording if a cassette is not inserted or a cassette without safety tab is inserted

- "PLEASE PUSH POWER OFF TO SET TIMER"

When the VIDEO TV is still turned on before the timer recording starts or when SLEEP OFF time and TIMER REC START overlap

- "PLEASE STOP THE TAPE"

When TIMER ON SCREEN is pressed at the same time the tape is being played back

- "VCR IS RECORDING"

When PLAY FAST FORWARD REWIND /REVIEW EJECT CH +/- 0~9 buttons INPUT SELECT JUMP or MENU is pressed at the same time the timer recording is being done

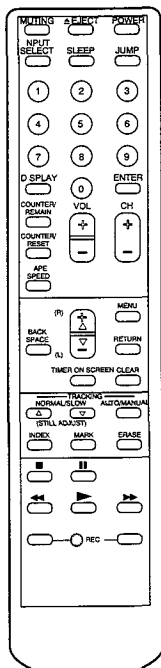
- "TIMER REC STARTS IN 5 MINUTES"

5 minutes before timer recording starts

- "PLEASE SET THE CLOCK FIRST"

When TIMER ON SCREEN is pressed in the condition the current time is not set

TIMER RECORDING

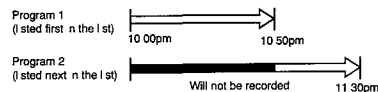


RM-Y126

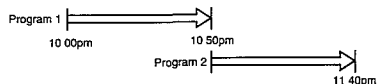
Recording TV Programs

If the turn-on time of two programs are the same

The program listed first on the TIMER SET/CHECK display has priority over the other programs. The timer recording of lower priority programs will be done from the point after program 1 is finished.

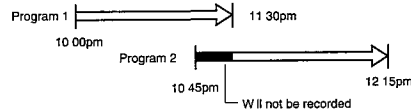


If the recording start time of program 2 is the same as the recording end time of program 1



If the recording start time of program 2 comes before recording of program 1 is over

The recording of program 2 will begin after program 1 is finished.



Note

If a power interruption occurs

- If a power interruption lasting less than approximately three hours occurs while the VCR is waiting for the preset time, the VIDEO TV re-enters the timer recording standby mode.
- If a power interruption lasting more than approximately three hours occurs before a timer recording, the memory clears. Reset the date and time for timer recording.
- If a power interruption lasting less than approximately three hours occurs during a timer recording, the VIDEO TV starts recording again.

Checking the Timer Settings

You can display all of the timer settings on the VIDEO TV screen to check the settings.

- Press **TIMER ON SCREEN**.
The **TIMER SET/CHECK** display appears.

TIMER ON SCREEN



| TIMER SET/CHECK 3/1 TUES | | | | |
|---|---------|---------|------|--|
| DATE | START | STOP | CH | |
| 3/10THU | 9:00AM | 10:55AM | 26EP | |
| 3/11FRI | 1:00PM | 2:15PM | 10AT | |
| 3/4FRI | 1:00PM | 2:15PM | 10SP | |
| MON-FRI | 11:00AM | 2:15PM | 11SP | |
| SUN-SAT | 11:00AM | 2:15PM | 25AT | |
| EVERY-SAT | 11:00AM | 2:15PM | 25AT | |
| Use Δ ∇ \leftarrow \rightarrow Exit MENU | | | | |

- Press **TIMER ON SCREEN** again to return to the original screen.

Changing or Cancelling the Timer Settings

The timer settings can be changed or cancelled by referring to the **TIMER SET/CHECK** display.

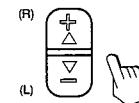
- Press **TIMER ON SCREEN**.
The **TIMER SET/CHECK** display appears.

TIMER ON SCREEN



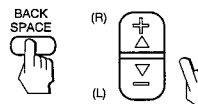
| TIMER SET/CHECK 3/1 TUES | | | | |
|---|---------|---------|------|--|
| DATE | START | STOP | CH | |
| 3/10THU | 9:00AM | 10:55AM | 26EP | |
| 3/11FRI | 1:00PM | 2:15PM | 10AT | |
| 3/4FRI | 1:00PM | 2:15PM | 10SP | |
| MON-FRI | 11:00AM | 2:15PM | 11SP | |
| SUN-SAT | 11:00AM | 2:15PM | 25AT | |
| EVERY-SAT | 11:00AM | 2:15PM | 25AT | |
| Use Δ ∇ \leftarrow \rightarrow Exit MENU | | | | |

- Press Δ or ∇ to move the cursor to the program you wish to change or cancel.



| TIMER SET/CHECK 3/1 TUES | | | | |
|---|---------|---------|------|--|
| DATE | START | STOP | CH | |
| 3/10THU | 9:00AM | 10:55AM | 26EP | |
| 3/11FRI | 1:00PM | 2:15PM | 10AT | |
| 3/4FRI | 1:00PM | 2:15PM | 10SP | |
| MON-FRI | 11:00AM | 2:15PM | 11SP | |
| SUN-SAT | 11:00AM | 2:15PM | 25AT | |
| EVERY-SAT | 11:00AM | 2:15PM | 25AT | |
| Use Δ ∇ \leftarrow \rightarrow Exit MENU | | | | |

- To change it, flash the item to be changed by pressing **BACK SPACE** and make the required changes by pressing Δ or ∇ .



To cancel it, move the cursor to the item to be cancelled by pressing Δ or ∇ , then press **CLEAR**.



- Press **TIMER ON SCREEN** to return to the original screen.

Note

The TIMER SET/CHECK display
When a recording is set for only one day, that setting is erased from the **TIMER SET/CHECK** display after the recording is over.

QUICK TIMER RECORDING

This function is convenient when for example you want to set the VCR to start recording immediately without going through the whole timer setting procedure

Notes

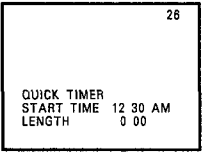
- Make sure that the clock is set correctly before you activate Quick Timer Recording
- During Quick Timer Recording you cannot change the channel on the VIDEO TV

1 Insert a cassette The VIDEO TV automatically turns on

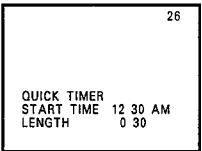
2 Press INPUT SELECT so that a channel number appears Press TAPE SPEED to select the recording speed SP LP or EP

3 Select the desired channel number with the 0-9 buttons and ENTER or CHANNEL +/- If you try to select the Cable TV channel first set CABLE to ON in SET UP menu

4 Repeatedly press START on the front panel to preset the start time

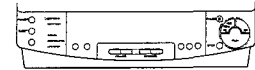


5 Press LENGTH on the front panel to set the recording time which appears on the screen Each time you press LENGTH the time length advances in 30 minute increments up to 9 hours



6 Press POWER to turn off the VIDEO TV

The VCR turns on at the preset time and starts recording then stops at the preset time



Notes

- To extend the Quick Timer Recording time press LENGTH to advance the recording time in 30 minute increments
- To clear the Quick Timer Recording setting press LENGTH and START at the same time
- If you try the Quick Timer Recording immediately without setting the start time delete the step 4
- If the tape runs out during Quick Timer Recording recording will stop and the power goes off The tape will not rewind automatically
- If a power interruption occurs during Quick Timer Recording recording will stop and the power goes off If the power interruption lasts less than three hours and the power is restored before the recording end time recording will start again from that point

1-15. INDEX FUNCTION

INDEX signal marks on the tape let you scan through the start of different programs or search for a specific section of tape

Marking INDEX Signals

Automatic INDEX mark

An INDEX signal is automatically marked at the beginning of recording

INDEX MARK

Manual INDEX mark

INDEX signals can be marked at any desired point during any recording or normal playback

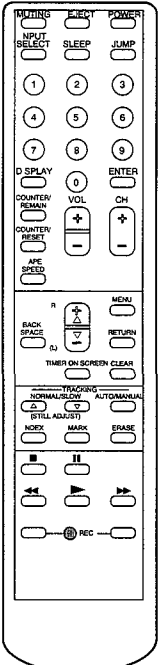
Press INDEX once
INDEX 00 appears

INDEX 00

Then press MARK at the point where you want to mark INDEX signal
INDEX MARK appears on the screen

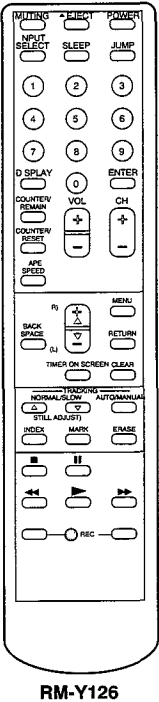
Note

- Leave an interval of more than 2 minutes between INDEX signals when marking them one after the other so that the VCR can detect them correctly
- While an INDEX signal is being marked during playback the recorded sound will not be heard but it will not be erased
- You cannot mark an INDEX signal in the following cases
 - On a tape without safety tab
 - On an unrecorded portion of a tape
 - Immediately before a point on the tape where the tape speed changes



RM-Y126

INDEX FUNCTION

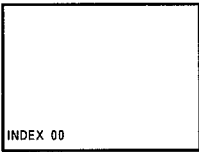


Playing Back from the INDEX Point

The beginning of each program can be found and played back by using the INDEX signals

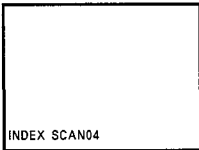
- 1 Insert a cassette with INDEX signals

- 2 Press INDEX once during playback
INDEX 00 appears on the screen



- 3 Press either FAST FORWARD or REWIND/REVIEW to start the INDEX scan The tape rewinds or rapidly advances to the next marked signal

The tape plays back for about 5 seconds then rewinds or rapidly advances to the next INDEX signal Each time INDEX signal is detected and playback begins the INDEX scan number (INDEX SCAN 04) appears



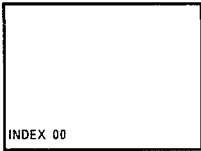
- 4 When the desired program is detected press PLAY
Playback starts from that point

Locating the Desired Program (INDEX Search)

A particular program can be located and played back by designating how many INDEX signals ahead or behind that program is from the current position

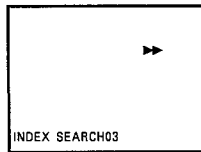
- 1 Insert a cassette with INDEX signals

- 2 Press INDEX
INDEX 00 appears



- 3 Using the 0 9 buttons enter the number of INDEX signals you want to skip
For example if the tape is at INDEX 02 and you want to locate INDEX 05, press 0 3

- 4 Press either FAST FORWARD or REWIND /REVIEW
INDEX SEARCH03 appears on the screen When the desired signal is found playback begins automatically

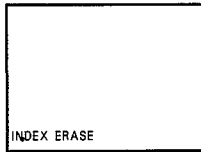


Erasing INDEX Signals

You can erase unnecessary INDEX signals

- 1 Press INDEX during playback
INDEX 00 appears

- 2 Press INDEX during playback
INDEX 00 appears



- 3 Press either FAST FORWARD or REWIND/REVIEW
The first subsequent INDEX signal is erased and the tape begins playback

Note

While INDEX signal is being erased the recorded sound is temporarily muted

1-16. TROUBLESHOOTING

If you have a problem with the VIDEO TV, first check the power cord connection then go through the following list. Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorised Sony service facility.

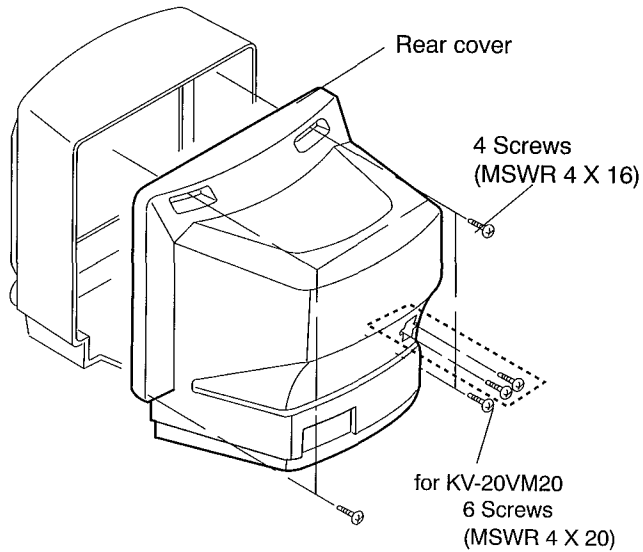
VIDEO TV RECEPTION

| Symptoms | Suggestions |
|--------------------------------|---|
| No picture or sound | <ul style="list-style-type: none">● Make sure the unit is plugged into a working AC outlet● Check that POWER is set to ON● Check the antenna wires, connections and direction |
| Picture OK, sound poor | <ul style="list-style-type: none">● Adjust the sound |
| Sound OK, no picture | <ul style="list-style-type: none">● Try another channel● Adjust the picture |
| Picture weak or blurred | <ul style="list-style-type: none">● Check the antenna wires, connections and direction● Adjust picture control |
| Picture rolls vertically | <ul style="list-style-type: none">● Check the antenna wires, connections and direction |
| Ghosts (multiple images) | <ul style="list-style-type: none">● Check the antenna wires, connections and direction● Install a directional antenna |
| Wrong color or no color | <ul style="list-style-type: none">● Adjust picture controls |
| No response to button pressing | <ul style="list-style-type: none">● Press the buttons again carefully again. Unplug the set, then plug it in and try again. |
| No response to remote control | <ul style="list-style-type: none">● Check the polarity (+ and -) of the batteries● Replace the batteries |

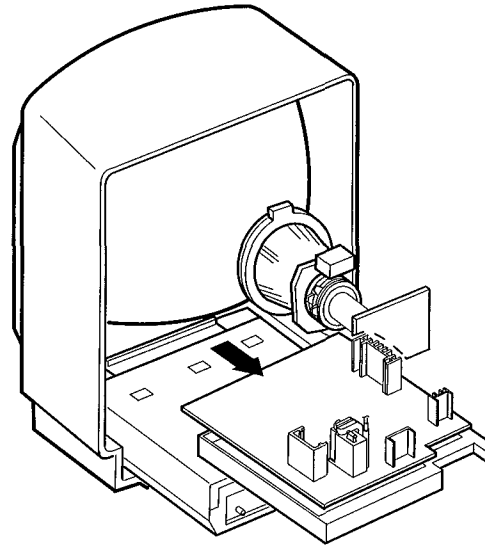
TV

SECTION 2 DISASSEMBLY

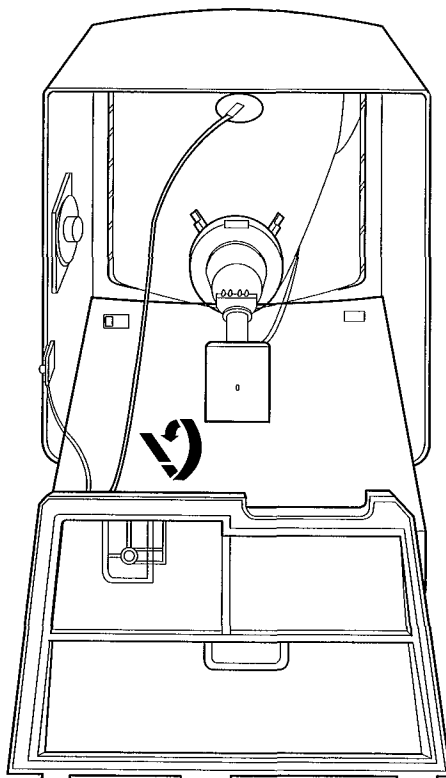
2-1. REAR COVER REMOVAL



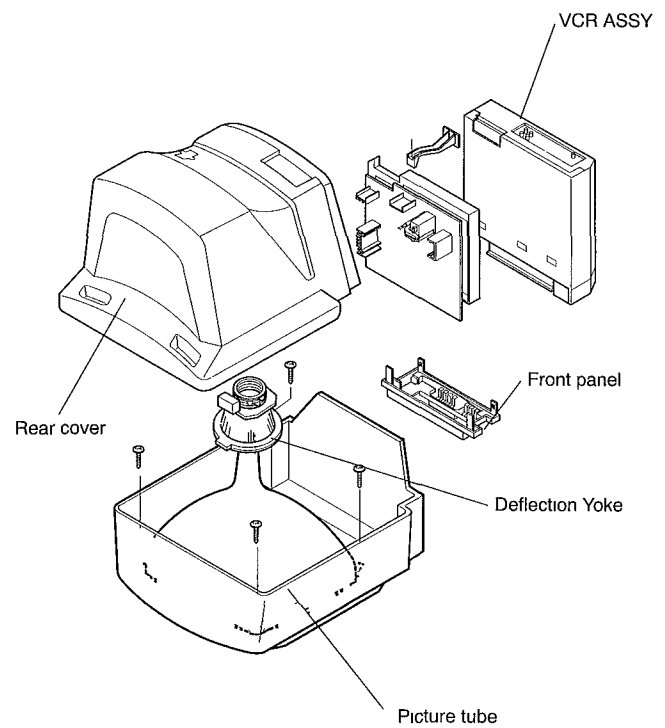
2-2. CHASSIS ASSY REMOVAL



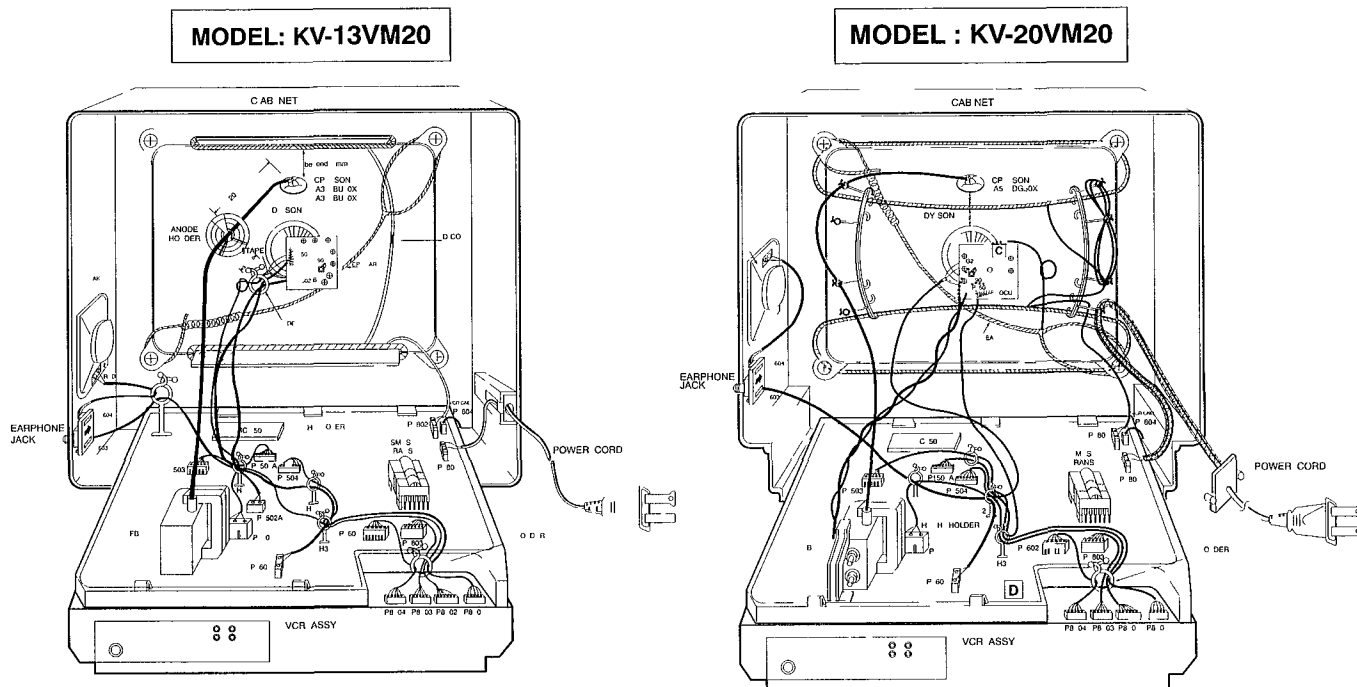
2-3. SERVICE POSITION



2-4. PICTURE TUBE REMOVAL



2-5. WIRE DRESSING REMOVAL

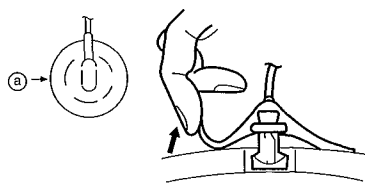


REMOVAL OF ANODE-CAP

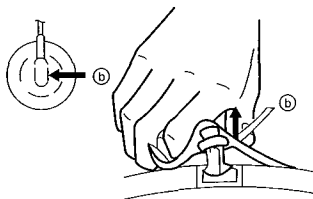
NOTE Short circuit the anode of the picture tube and anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode

CAUTION Anode-cap must be removed after discharge

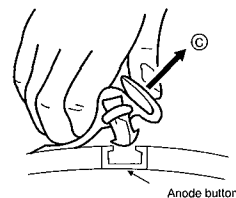
REMOVING PROCEDURES



- ① Turn up one side of the rubber cap in the direction indicated by the arrow a



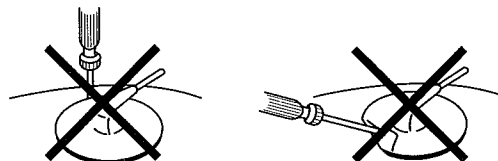
- ② Using a thumb, pull up the rubber cap firmly in the direction indicated by the arrow b



- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow c

HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp objects
- ② Don't press the rubber or you will hurt the inside of the anode-cap
A material fitting called as shatter-hook terminal is built in the rubber
- ③ Don't turn the foot of rubber over hardly! The shatter-hook terminal will stick out or hurt the rubber



SECTION 3

SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete re-alignment is required or a new picture tube is installed
- These adjustments should be performed with rated power supply voltage unless otherwise noted

The controls and switches should be set as follows unless otherwise noted

| | | |
|----------------------------|-----------|-----|
| Standard Picture condition | PICTURE | 80% |
| | BRIGHT | 50% |
| | HUE | 50% |
| | COLOR | 50% |
| | SHARPNESS | 50% |

Preperation:

- Input a white signal
- Before starting, degauss the entire screen

3-1. BEAM LANDING

- 1 Input a raster signal with the pattern generator
- 2 Loosen the deflection yoke mounting screw, and set the purity control to the center as shown in Fig 2
- 3 Input a green raster
- 4 Move the deflection yoke backward, and adjust with the purity control so that green is in the center and red and blue are at the sides evenly (Fig 3)
- 5 Move the deflection yoke forward, and adjust so that the entire screen becomes green (Fig 1)
- 6 Switch the raster signal to red and blue and confirm the condition
- 7 When the position of the deflection yoke is determined, tighten it with the deflection yoke mounting screw
- 8 When landing at the corner is not right, adjust by using the disk magnets (Fig 4)

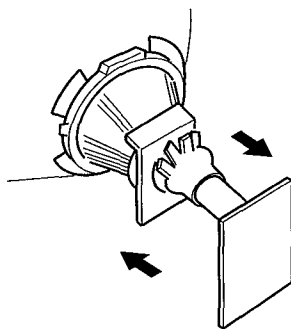


Fig 1

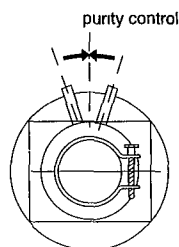


Fig 2

Perform the adjustments in order as follows

- 1 Beam Landing
- 2 Convergence
- 3 Focus
- 4 H- line and White Balance

Note: Test Equipment Required

- 1 Color bar Pattern Generator
- 2 Degausser
- 3 DC Power Supply
- 4 Digital multimeter

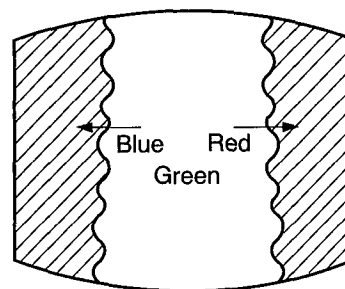


Fig 3

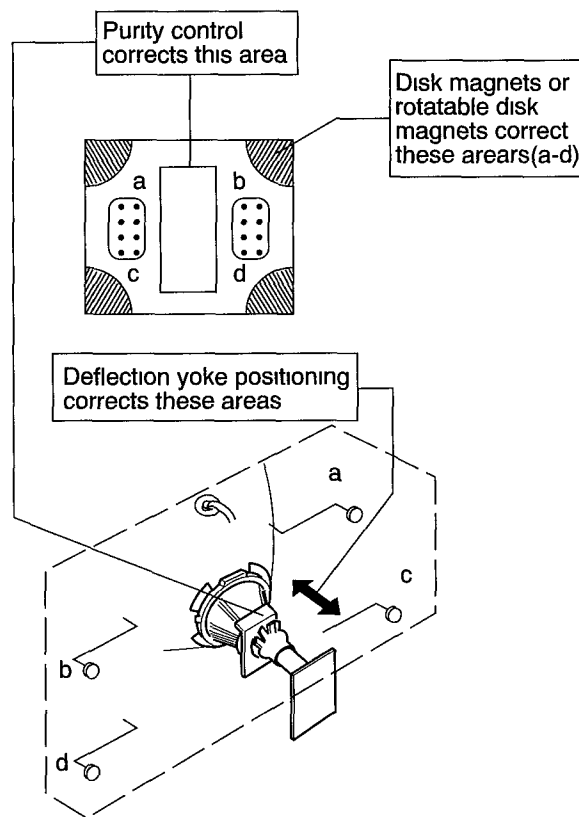


Fig 4

3-2. CONVERGENCE

Preparation:

- Before starting, perform FOCUS, H.SIZE, V.LIN and V.SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Input a dot signal.

(1) Horizontal and Vertical Static Convergence

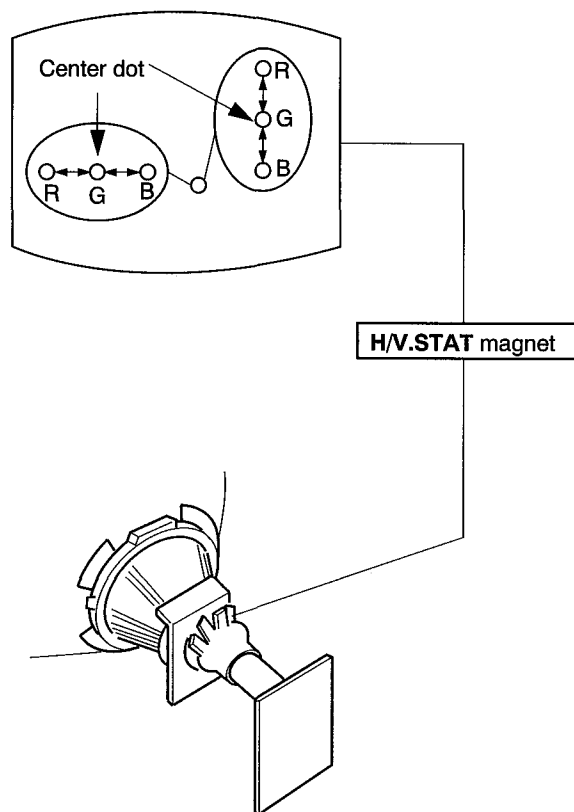
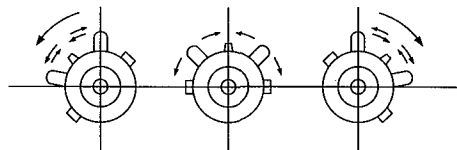
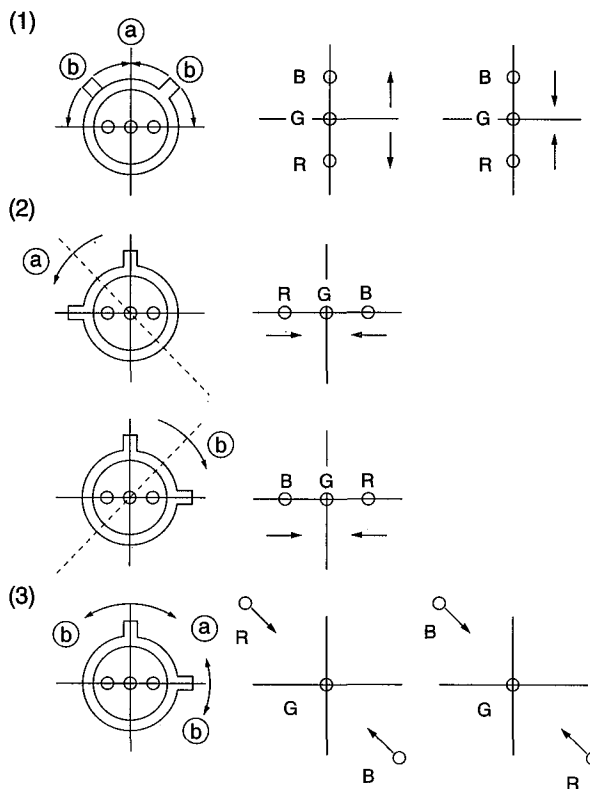


Fig. 5

- Tilt The H/V.STAT magnet and adjust static convergence to open or close the H/V.STAT magnet.



- When the H/V.STAT magnet is move in the direction of arrow (a) and (b), red, green and blue dots move as shown below.



If the blue dot does not cover with red and green dots, refer to Fig 6 perform the following steps.

1. Move BMC magnet (a) to correct insufficient H.static convergence.
2. Rotate BMC magnet (b) to correct insufficient V.static convergence.

In either case, repeat Beam Landing Adjustment.

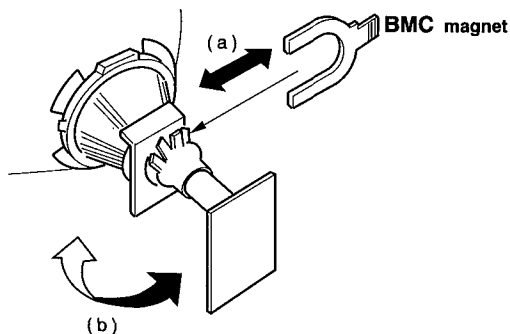


Fig. 6

(3) Screen-corner Convergence

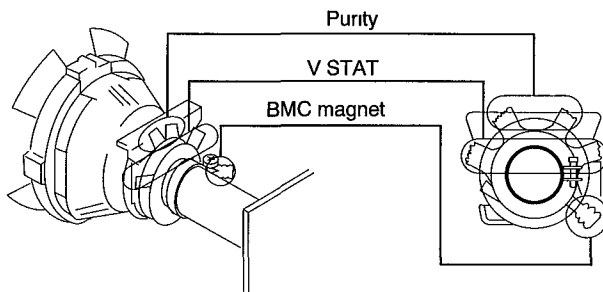


Fig 7

(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical static convergence Adjustment
- 1 Slightly loosen deflection yoke screw
- 2 Remove deflection yoke spacers
- 3 Move the deflection yoke for best convergence as shown below
- 4 Tighten the deflection yoke screw
- 5 Install the deflection yoke spacers

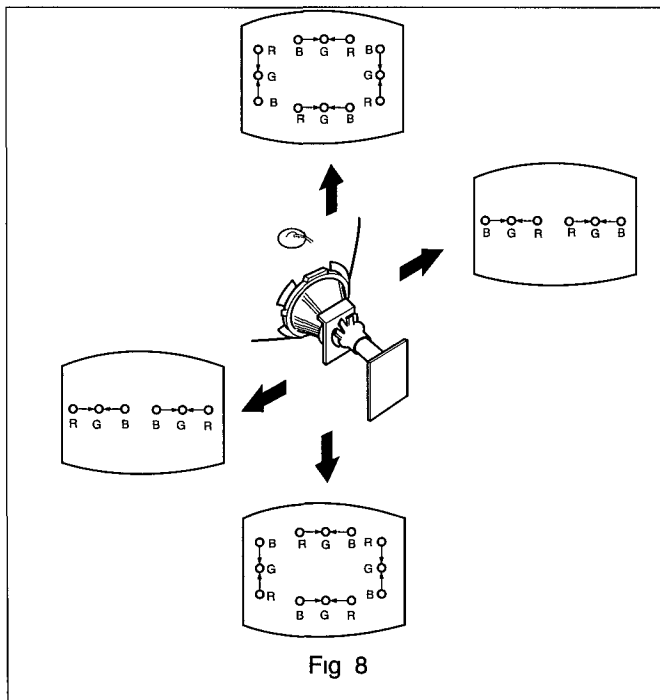


Fig 8

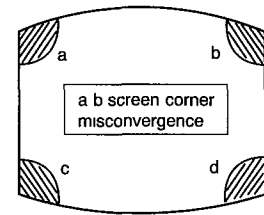
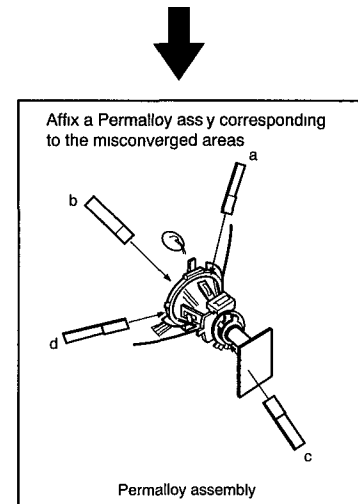


Fig 9



3-3. FOCUS ADJUSTMENT

- Input Cross Hatch Pattern.
- Turn the focus control (VR1907) on the C board to obtain the best focus in the center and circumference.

3-4. SCREEN (G2)

1. Input a dots pattern.
2. Set the PICTURE, BRIGHT controls at minimum.
3. Supply DC 160V by equipment into R.G. and B cathode.
4. Adjust VR1908 (SCREEN) so that the raster is invisible.

3-5. WHITE BALANCE ADJUSTMENT

1. Input a all white signal.
2. Set the PICTURE to minimum and set the BRIGHT at normal.(Refer to P.12 of this manual for the adjustment.)
3. Turn VR1901(R.DRIVE) and VR1902(B.DRIVE) fully clockwise.
4. Adjust BIAS controls for best white balance.
5. Set the PICTURE control to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
6. Repeat steps 4 and 5.

SECTION 4

SAFETY RELATED CHECK

4-1. CIRCUIT CHECK FOR SAFETY

- 1) Input the color bar signal
- 2) Connect a 1/2W, 470K resistor between Q1814-B of D board and GND (J90)
- 3) As soon as connecting the external resistor, the receiver stops operating (power relay off) And removing the external resistor, the receiver operates normally when plug in the AC POWER CORD after plugging it out

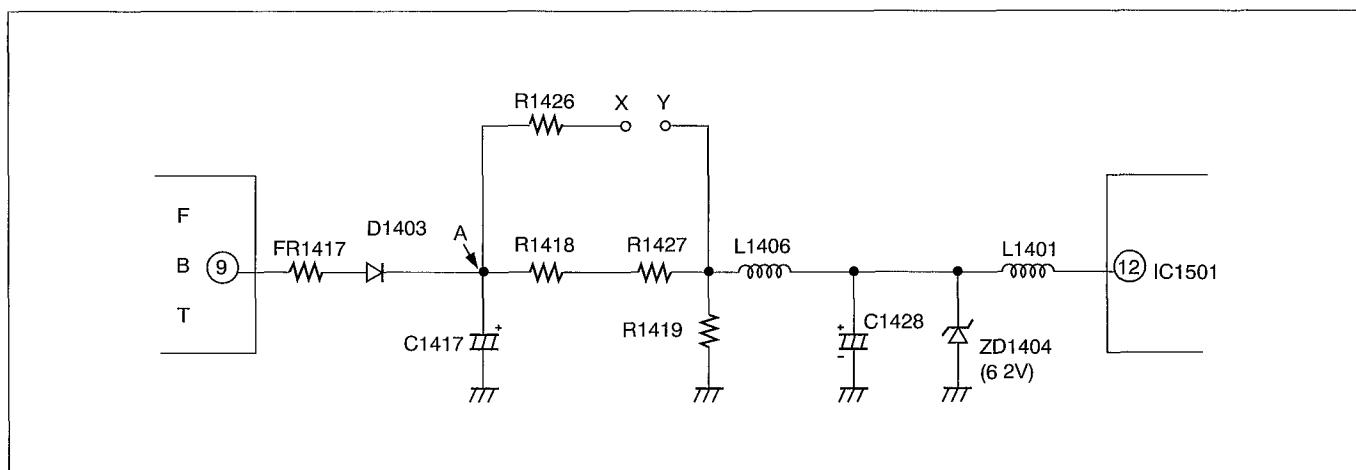
4-2. VERTICAL SHORT CIRCUIT CHECK

- 1) Input the color bar signal
- 2) Short both terminals C1311 from outside
- 3) As soon as shorting C1311, the receiver stops operating And removing the external short, the receiver operates normally

4-3. HOLD-DOWN CHECK

This procedure should always be performed when replacing the following components (marked with ■ on the Schematic Diagram) ; IC1501, L1406, ZD1404, T1402, DY

1) Circuit Diagram



2) Circuit operating explanation.

● Normal condition

DC voltage appears at point X from FBT pulse by rectifying circuit consisted of FR1417, D1403, and C1417. DC voltage of point Y is divided into R1418, R1427, R1419 from DC voltage of point A.

In normal condition, DC voltage of point Y is lower than 6.0 volt.

So the set is operated normally.

● Abnormal Condition

In abnormal condition, DC voltage of point X increases in proportion up to 6.0 volt.

Therefore, the hold down circuit is operated.

In result, the horizontal frequency is stopped.

3) Check the X-Ray protection circuit.

- a) Turn on the set and connect the color bar signal at the antenna terminal.
- b) Check the B+ voltage whether it is correct or not.
- c) If B+ is incorrect, power circuit is to be repaired.
- d) To check the operation of hold down circuit, short points X and Y.
- e) Identify the screen status whether raster is appeared or not.

f) If there is distorted synchronism of screen, the set is OK.

g) Remove the shorted jumper from points X and Y.

4) Troubleshooting the Hold-Down circuit.

Shorting points X and Y, check the voltage of point Y.

- If the voltage is below 6.0V DC, check ZD1404, C1428, L1406, R1419, FR1417, and D1403 and replace defective one.
- If the voltage is over 6.0V DC, check L1401, IC1501 and replace defective one.

SECTION 5

CIRCUIT ADJUSTMENT

5-1. H-LINE ADJUSTMENT

1) Preliminary Steps

- Input the standard White Signal.
- Set screen to standard condition.
- Set the red and blue driver (VR1901, 1902) to the mechanical center.
- Set the Bias controls (VR1903, 1904, 1905) to the mechanical a third position. (Min.-Max.)
- Make H-line by setting SW1201 to the center position.

2) Adjustment

- Turn the Screen control counterclockwise until the first horizontal line appears in the picture screen.
- Adjust two color bias controls for the colors which do not appear in the horizontal line so that the horizontal line becomes white.
- In state of the horizontal line is white, adjust screen volume so that the brightness of H-LINE become 0.3ft-L or so.
- Adjust SW1201 to the first position for the screen to appear.

5-2. H-CENTER ADJUSTMENT

- Input the color bar signal.
- Set screen to the standard condition.
- Set the horizontal-center control VR1401 so that right side and left side of the picture are equal. (horizontal center)

5-3. V-SIZE & V-CENTER ADJUSTMENT

- Input the Color bar signal.
- Set screen to normal position.
- Set screen to center of CRT by converting SW1301.
- Adjust the vertical size (VR1301) for approximately 1/2" overscan at the top and bottom of the display.

5-4. SUB-BRIGHT ADJUSTMENT

- Input the color bar signal.
- Push the MENU Key of the remote commander.
- Adjust VR1201 so that the step 3 and 4 are differentiated of sub-bright of pattern.
- Push the MENU Key of the remote commander again that the picture goes back to normal.

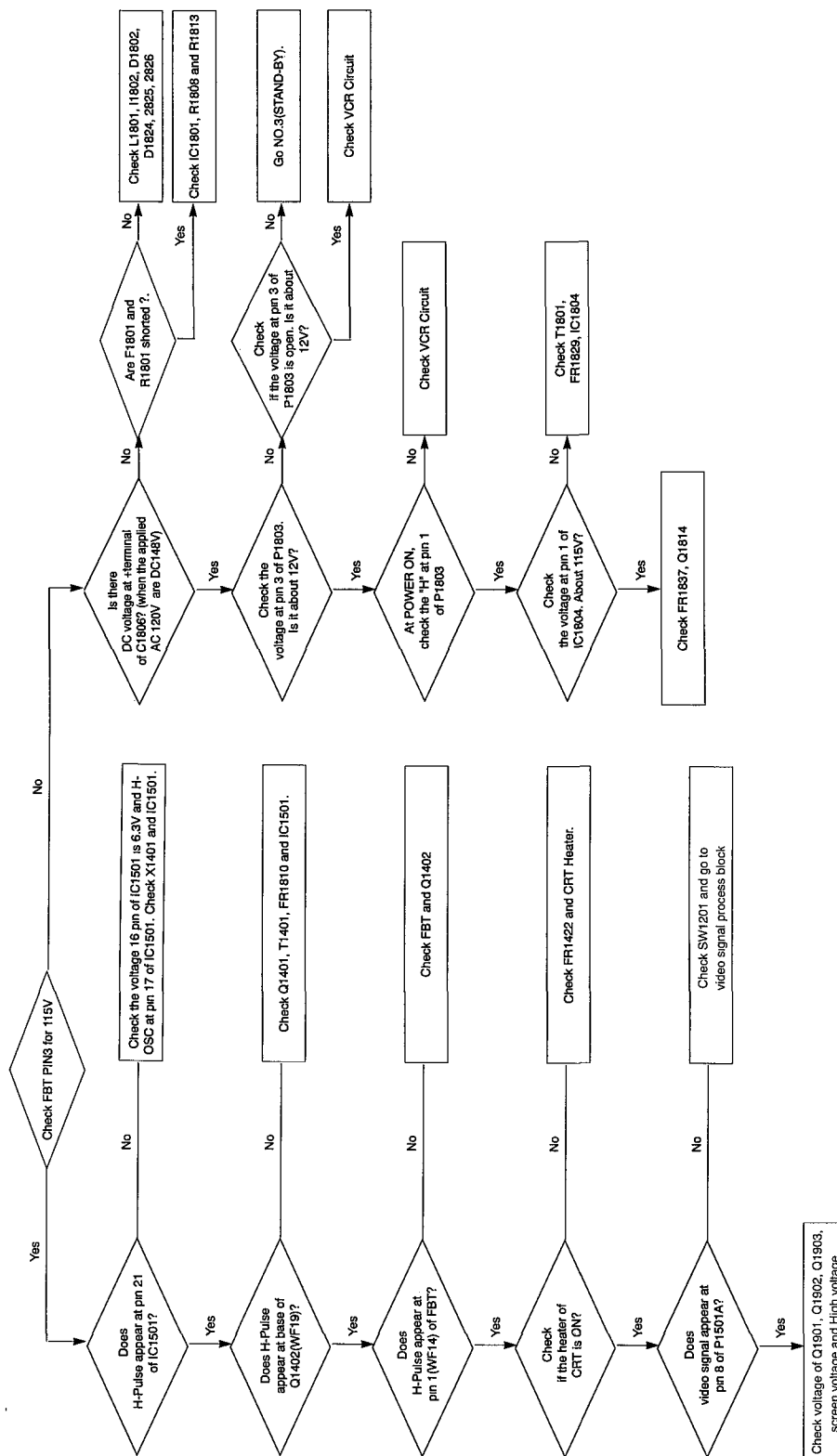
5-5. AGC ADJUSTMENT

1. Input the color-bar signal.
2. Adjust AGC VR of TU101 so that snow noise and cross-modulation disappear from the picture.
3. Confirm them at every channel.

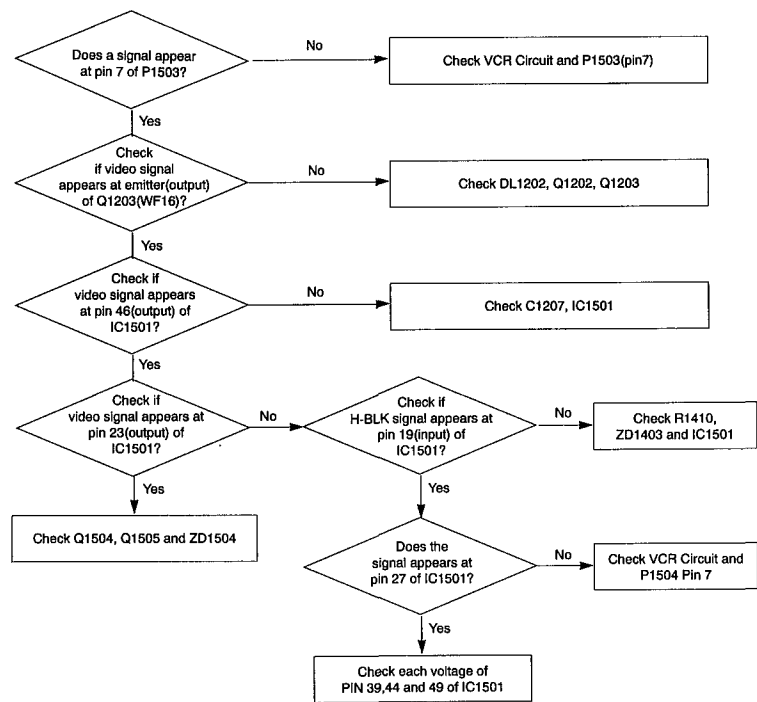
SECTION 6

TROUBLESHOOTING CHARTS

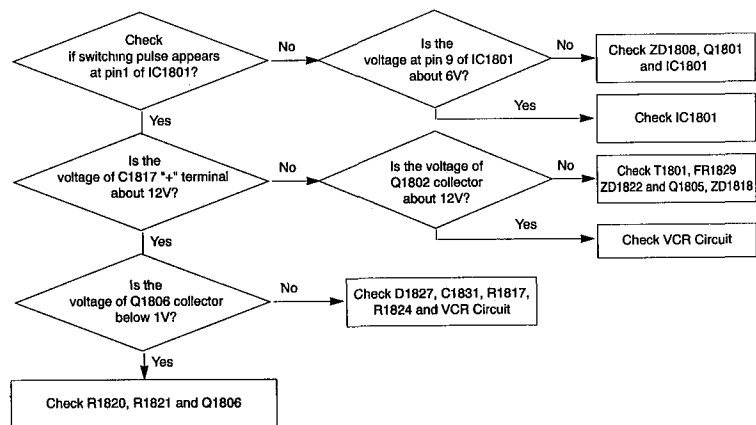
1. No Power



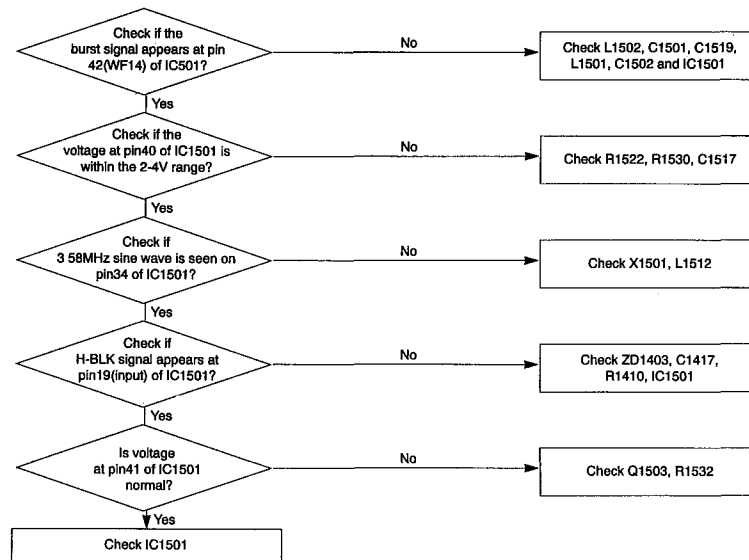
2. Video Signal Peocessing



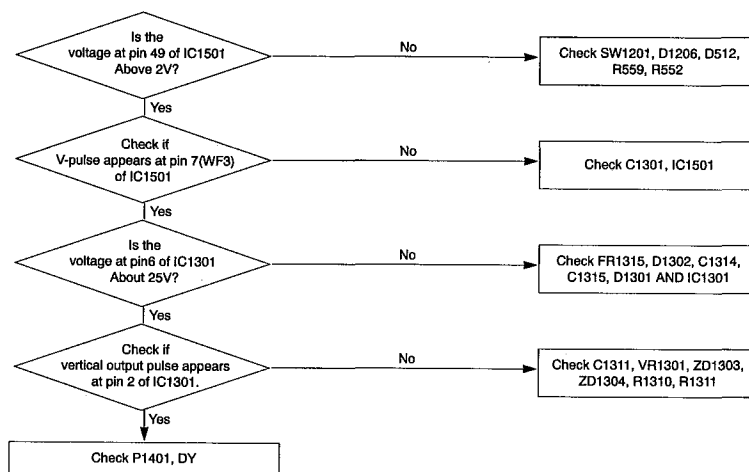
3. Stand-By



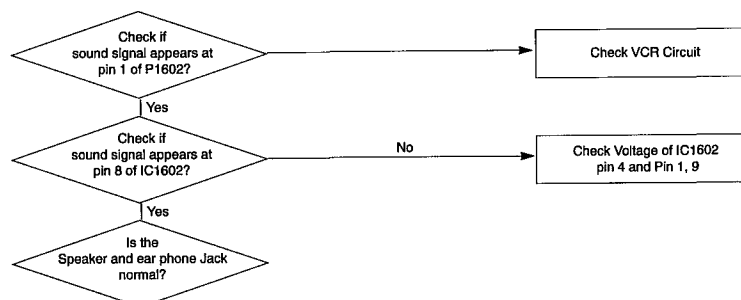
4. No Color



5. Vertical Parts



6. No Sound




MEMO

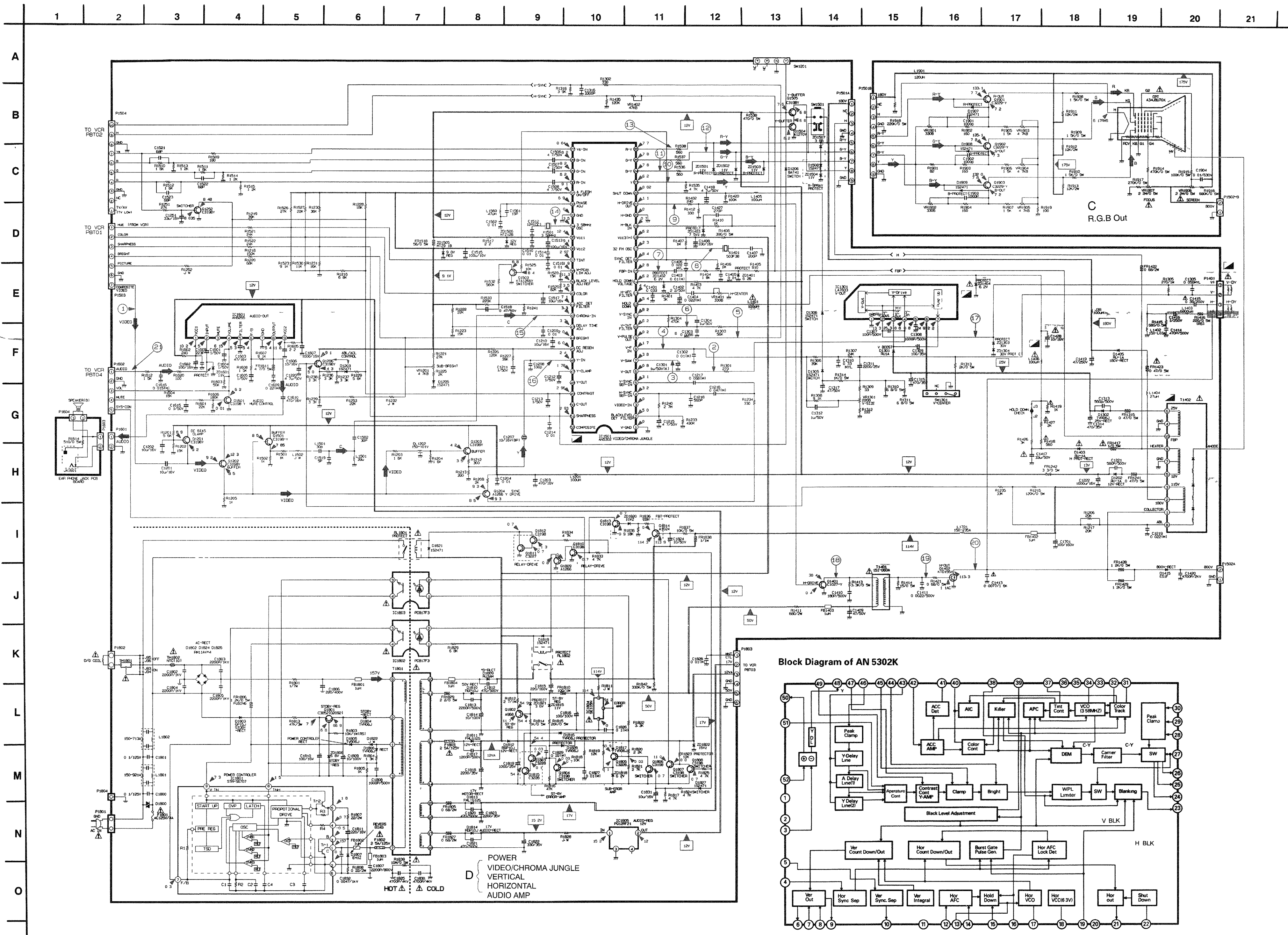
KV-13VM20

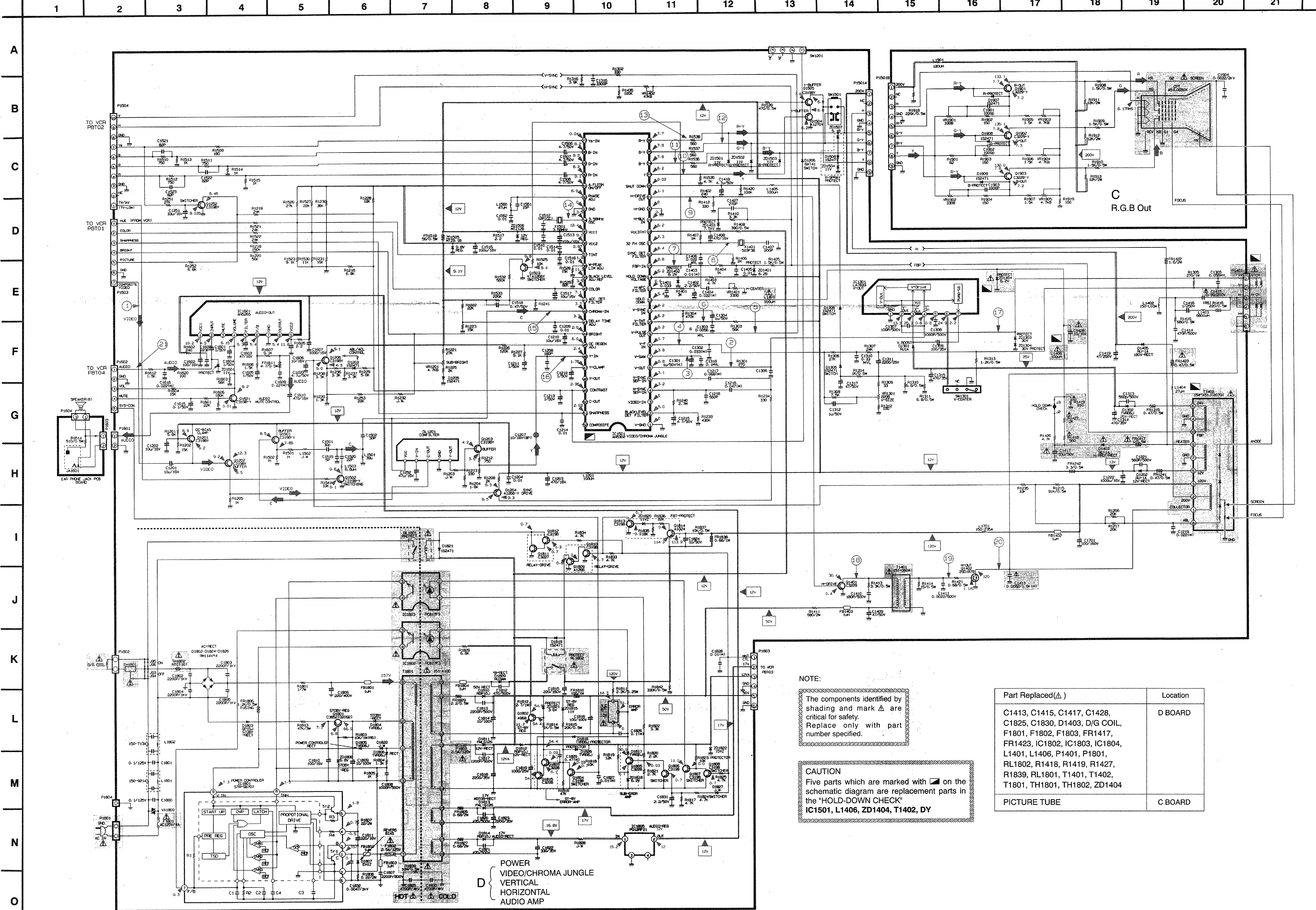
NOTE

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

CAUTION
Five parts which are marked with  on the schematic diagram are replacement parts in the "HOLD-DOWN CHECK"
IC1501, L1406, ZD1404, T1402, DY

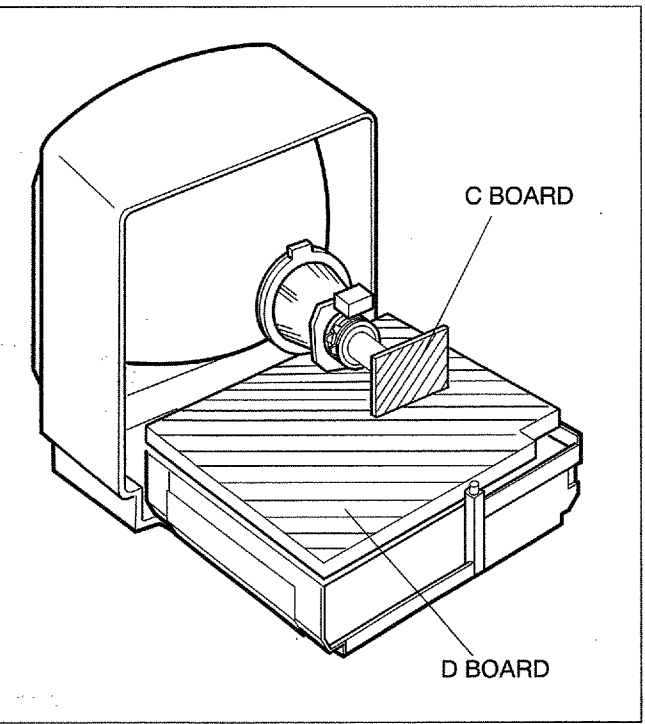
| Part Replaced(Δ) | Location | NOTE |
|--|----------|--|
| C1413, C1415, C1417, C1428, C1825, C1830, D1403, D/G COIL, F1801, F1802, F1803, FR1417, FR1423, IC1802, IC1803, IC1804, L1401, L1406, P1401, P1801, RL1802, R1418, R1419, R1427, R1839, RL1801, T1401, T1402, T1801, TH1801, TH1802, ZD1404 | D BOARD | <ol style="list-style-type: none"> 1. Resistance is shown in ohm. K=1,000 M=1,000,000 2. Capacitors are shown in uF otherwise noted: P=uu 3. Unless otherwise listed, all inductor values more than 1 are expressed in uH, and the values less than 1 n in H. 4. Voltages are measured DVM from point indicated to chassis ground, using color bar signal with all controls at normal. 5. Waveforms are measured with synchroscope from point indicated to chassis ground, using color bar signal with all controls at normal 6. May choose anyone, since listed following semiconductors have same characteristics. |
| PICTURE TUBE, VR1907, VR1908 | C BOARD | |



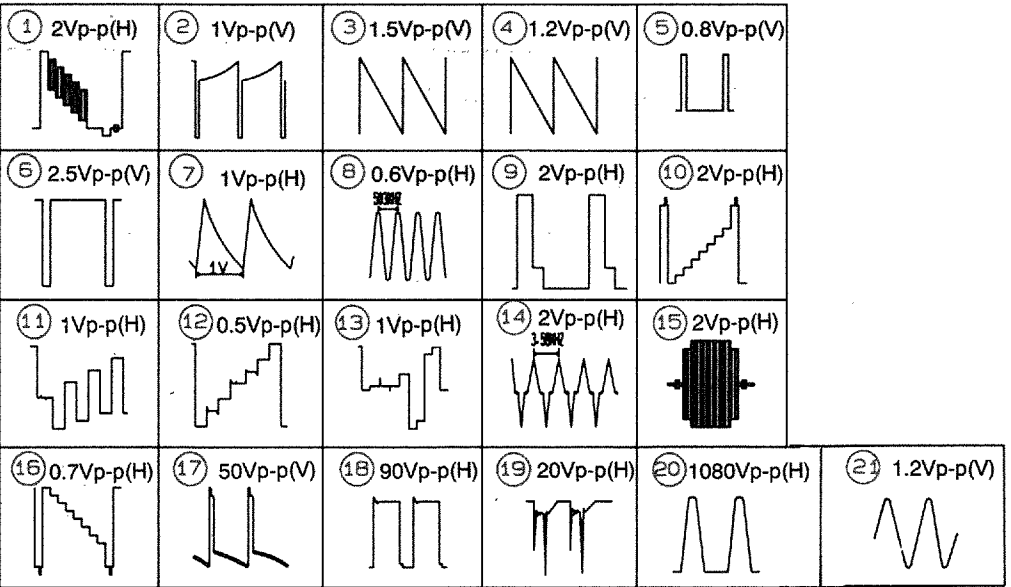


KV-20VM20

7-3. CIRCUIT BOARDS LOCATION AND PRINTED WIRING BOARDS



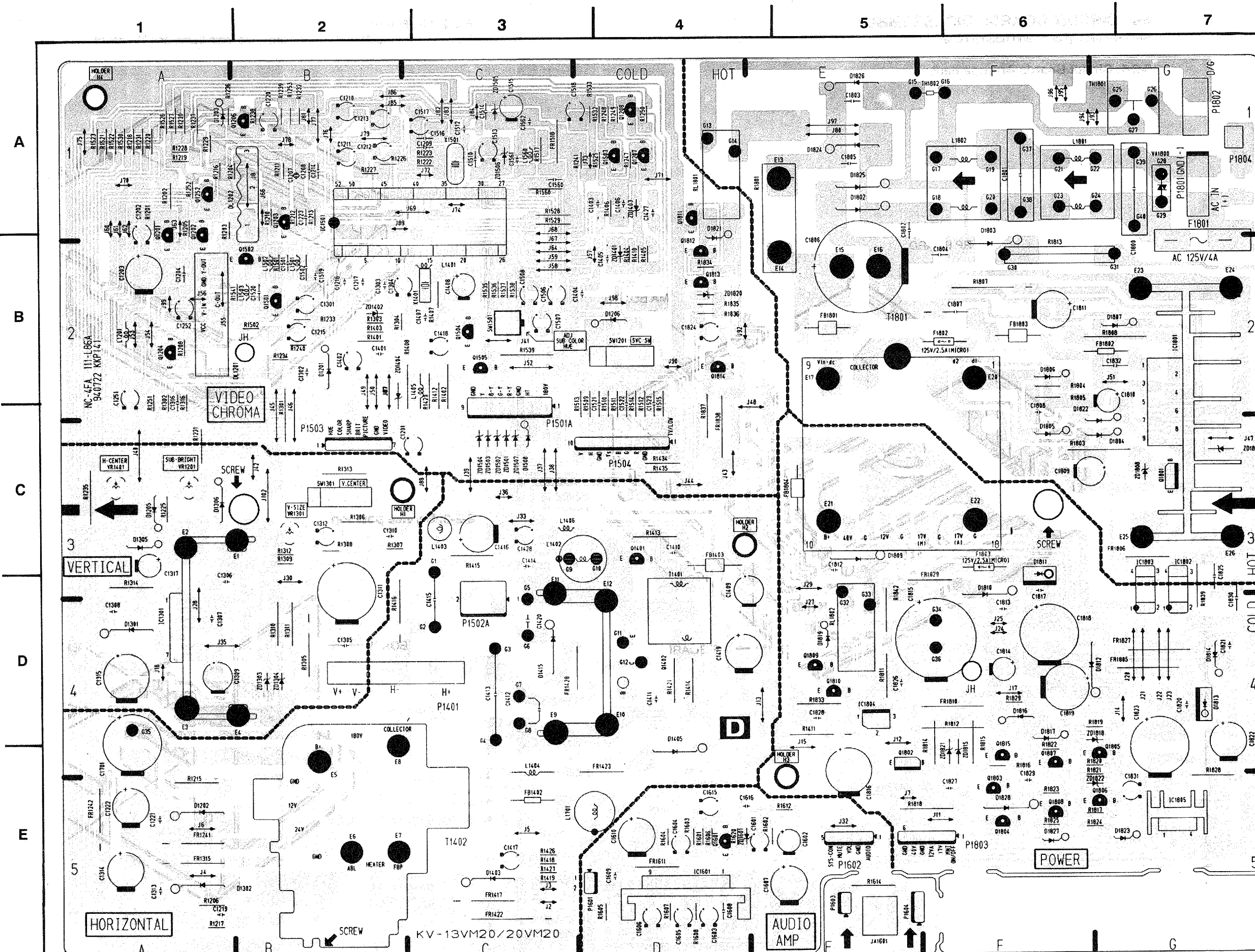
WAVEFORM



D BOARD

-D BOARD-

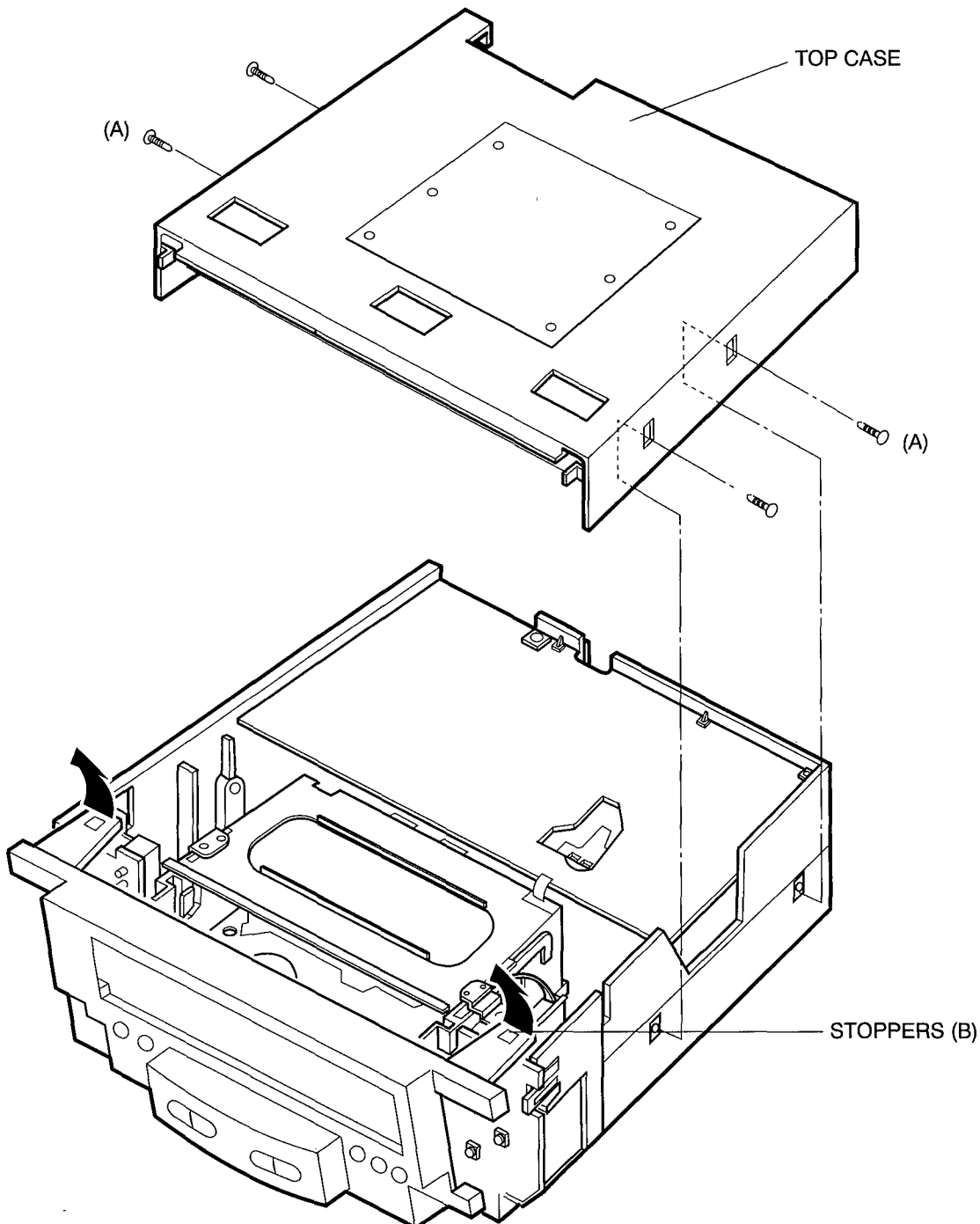
| IC | | TRANSISTOR | | TRANSFORMER | |
|--------|-----|------------|-----|-------------|-----|
| IC1301 | D-1 | Q1201 | A-1 | T1401 | C-4 |
| IC1501 | A-3 | Q1202 | A-1 | T1402 | E-3 |
| IC1601 | E-4 | Q1203 | A-2 | T1801 | B-5 |
| IC1801 | B-7 | Q1204 | B-1 | | |
| IC1802 | D-7 | Q1206 | A-2 | | |
| IC1803 | D-7 | Q1252 | A-1 | | |
| IC1804 | D-5 | Q1401 | C-4 | | |
| IC1805 | E-7 | Q1402 | D-4 | | |
| | | Q1501 | B-2 | | |
| | | Q1503 | A-4 | | |
| | | Q1504 | B-3 | | |
| | | Q1505 | B-3 | | |
| | | Q1801 | E-4 | | |
| | | Q1801 | C-7 | | |
| | | Q1802 | D-5 | | |
| | | Q1803 | E-6 | | |
| | | Q1804 | F-6 | | |
| | | Q1805 | E-6 | | |
| | | Q1806 | E-7 | | |
| | | Q1807 | D-6 | | |
| | | Q1808 | E-6 | | |
| | | Q1809 | D-5 | | |
| | | Q1810 | D-5 | | |
| | | Q1811 | A-4 | | |
| | | Q1812 | B-4 | | |
| | | Q1813 | B-4 | | |
| | | Q1815 | D-6 | | |
| DIODE | | | | | |
| D1201 | B-2 | | | | |
| D1202 | E-1 | | | | |
| D1203 | A-1 | | | | |
| D1205 | C-1 | | | | |
| D1206 | B-4 | | | | |
| D1301 | D-1 | | | | |
| D1302 | E-1 | | | | |
| D1305 | C-1 | | | | |
| D1306 | C-1 | | | | |
| D1403 | E-3 | | | | |
| D1405 | D-4 | | | | |
| D1415 | D-3 | | | | |
| D1508 | D-3 | | | | |
| D1802 | A-5 | | | | |
| D1803 | B-6 | | | | |
| D1804 | C-7 | | | | |
| D1805 | C-6 | | | | |
| D1806 | B-6 | | | | |
| D1807 | B-7 | | | | |
| D1809 | C-5 | | | | |
| D1810 | C-6 | | | | |
| D1811 | B-4 | | | | |
| D1812 | D-6 | | | | |
| D1813 | D-7 | | | | |



SECTION 8 DISASSEMBLY

8-1. CASING & FRONT PANEL DISASSEMBLY

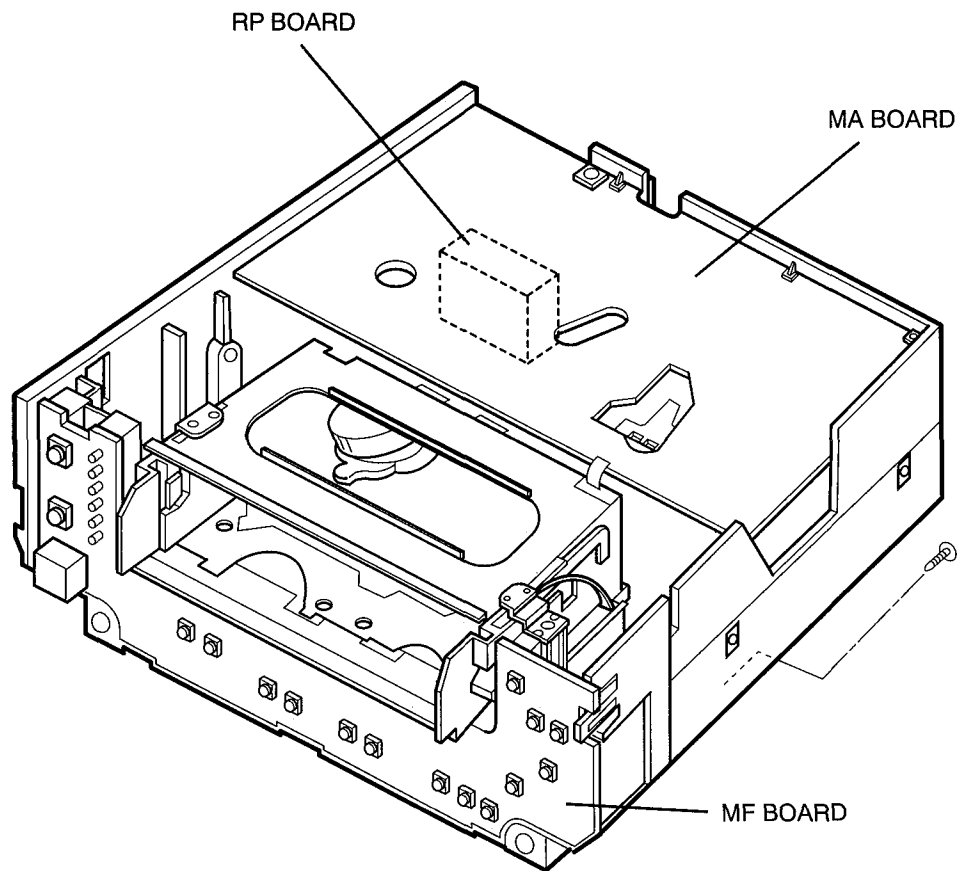
- 1) Remove the top of case by removing 4 screws (A) on the main frame.
- 2) Pull the stoppers (B) in the direction of the arrow and then separate front panel from main frame.



8-2. CIRCUIT BOARDS DISASSEMBLY

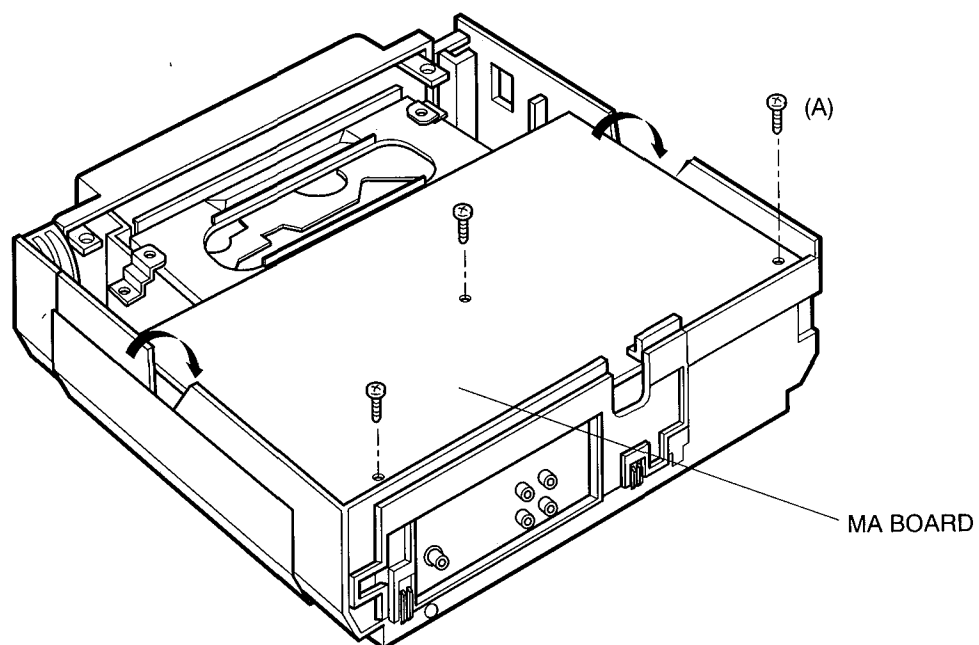
Remove the top case and bottom cover.

8-2-1. Circuit Boards Arrangement

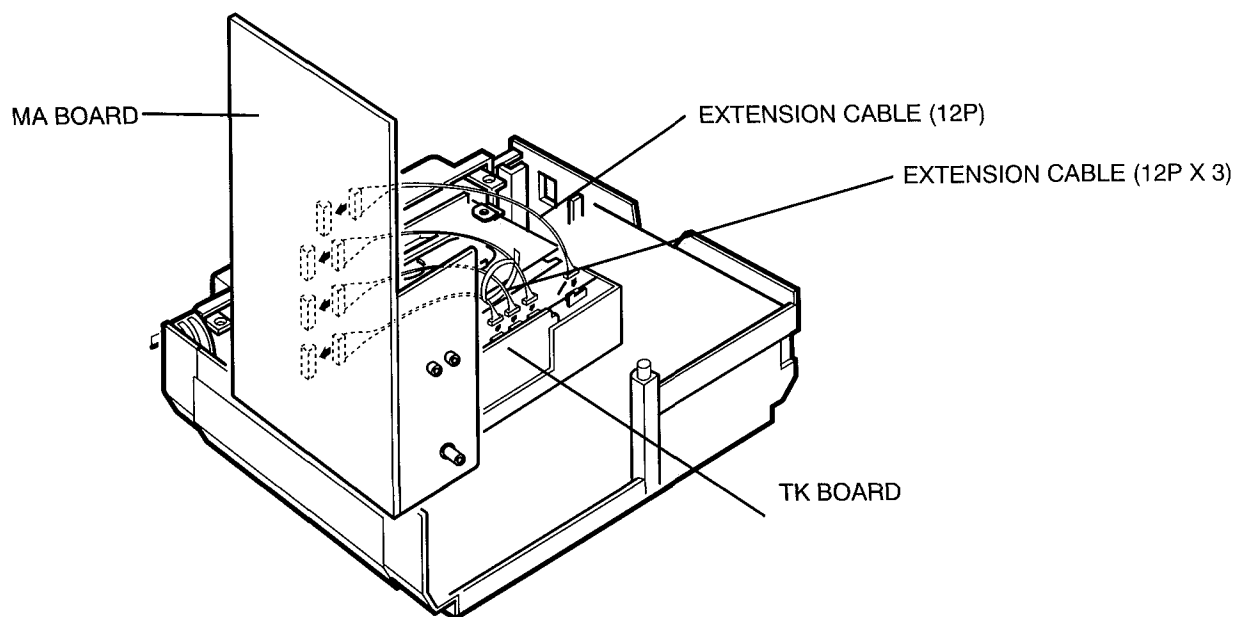


8-2-2. MA Board

Remove 3 screws(A) and then separate the main frame and MA board.

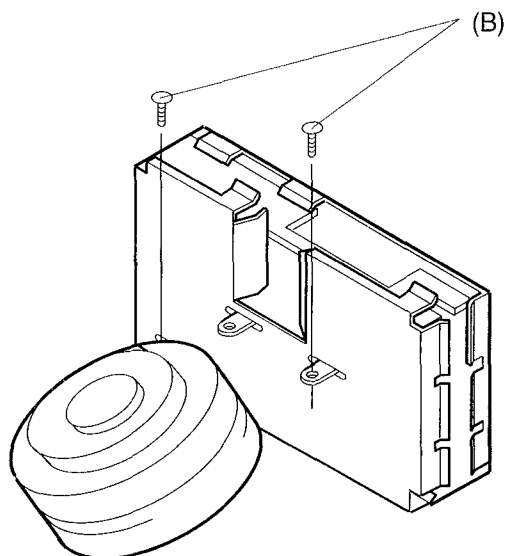


8-2-3. Service position



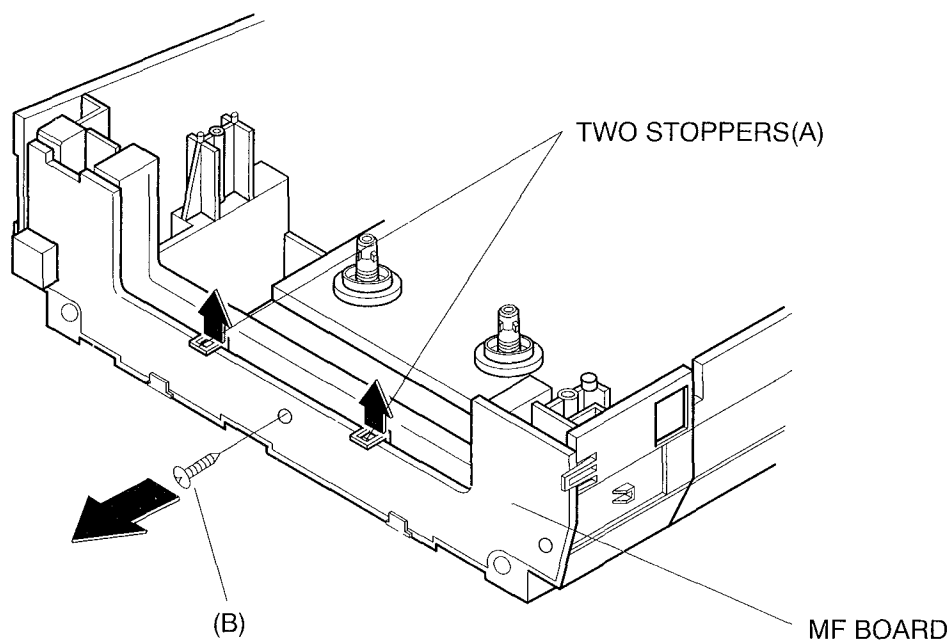
8-2-4. RP Board

- 1) Remove two screws (B) for disassembling the shield case
- 2) Remove a connector assembled with the drum assy from P C Board.



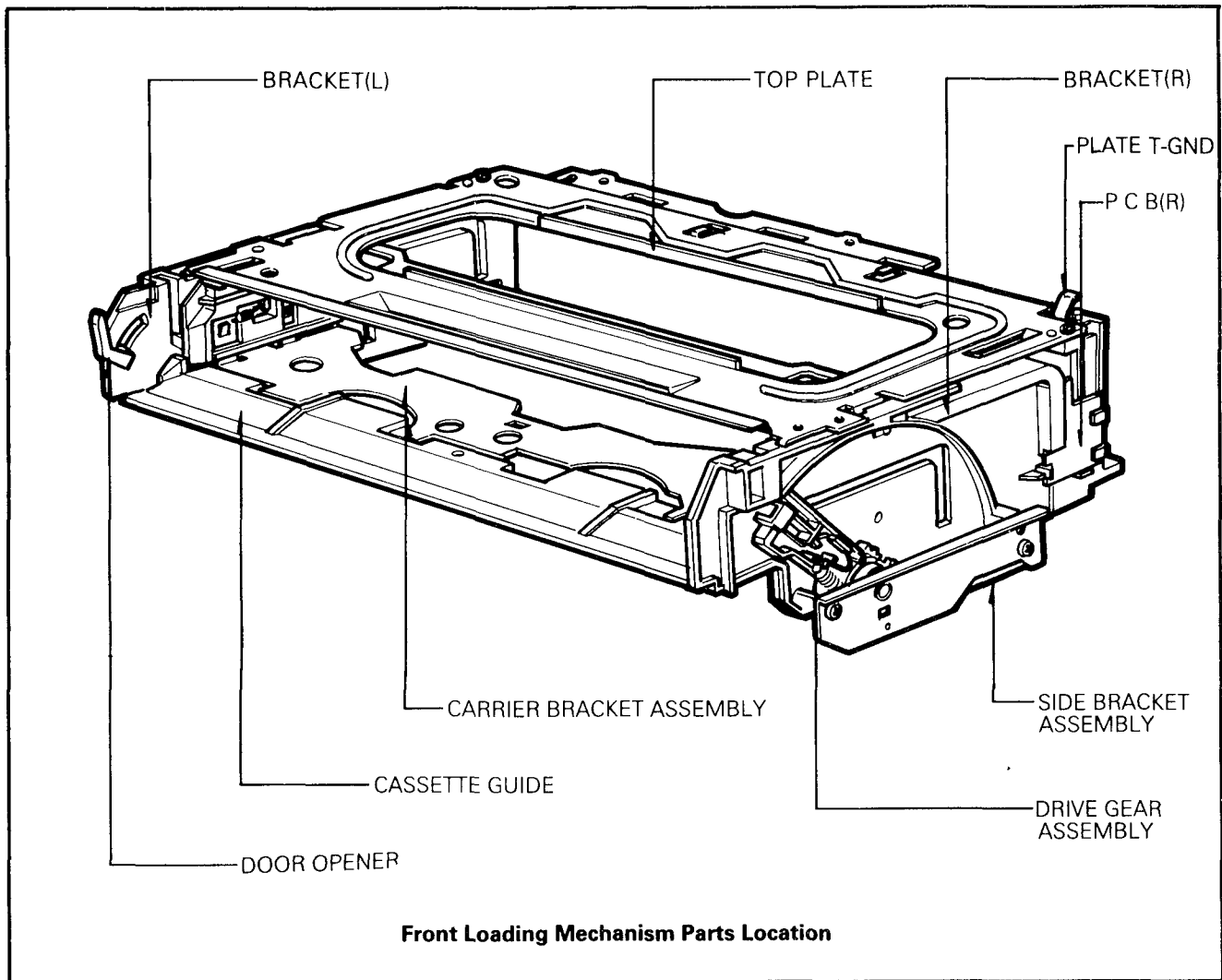
8-2-5. MF Board

- 1) Remove screw (B) and then separate the main frame and MF board
- 2) Pull the P C.Board toward you while lifting two stoppers(A) in the direction of the small arrows to disengage, and remove the P C.Board
- 3) Unplug the connector for complete removal.



SECTION 9 DISASSEMBLY INSTRUCTIONS

9-1. FRONT LOADING MECHANISM



1. Component list below will be described as if the top and bottom covers and the front panel have already been removed
2. P.C.B Assembly
3. Top Plate
4. Carrier Bracket Assembly
5. Cassette Guide
6. Side Bracket Assembly
7. Bracket(L), (R)
8. Door Opener
9. Drive Gear Assembly

1. Front Loading Mechanism Assembly (Fig. A-1-1)

- 1) Remove the Top and Bottom Covers and the Front panel.
- 2) Unplug the connector.
- 3) Remove two screws(A)
- 4) Lift up the Front Loading Mechanism in the direction of arrow(C)

* NOTE

- 1) When disassembling and reassembling
 - ① Give special attention to removal and to reassemble, because two tabs(D) are engaged.
- ② Make sure that Bosses of Bracket(L),(R) are properly engaged in the holes of the chassis
- ③ To reassemble Front Loading Mechanism, the Drive Gear Assembly should be turned in a counterclockwise as shown in Fig A-1-2 so that the Rack Gear N.D of Front Loading Mechanism Assembly is meshed into Rack Gear F L of Deck Mechanism Assembly correctly as shown in Fig A-1-1.(B).

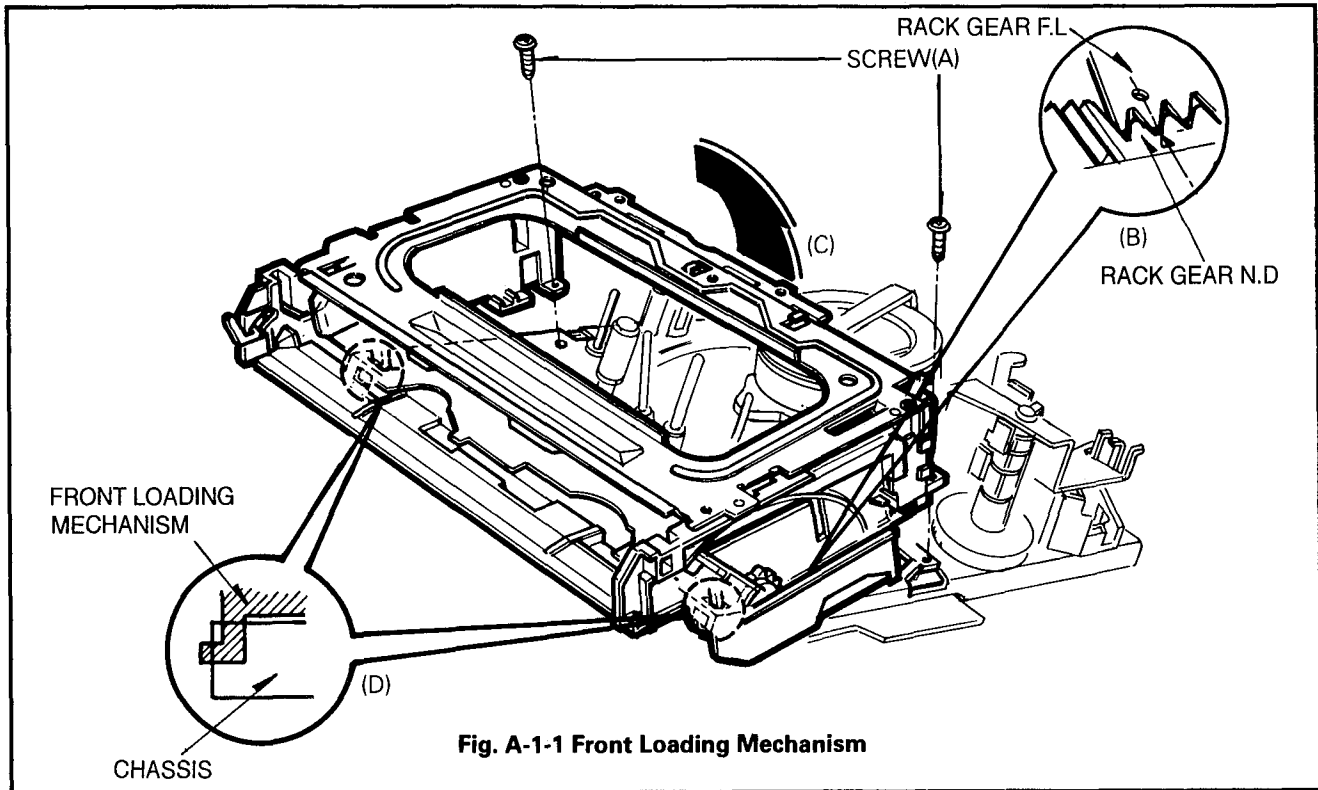


Fig. A-1-1 Front Loading Mechanism

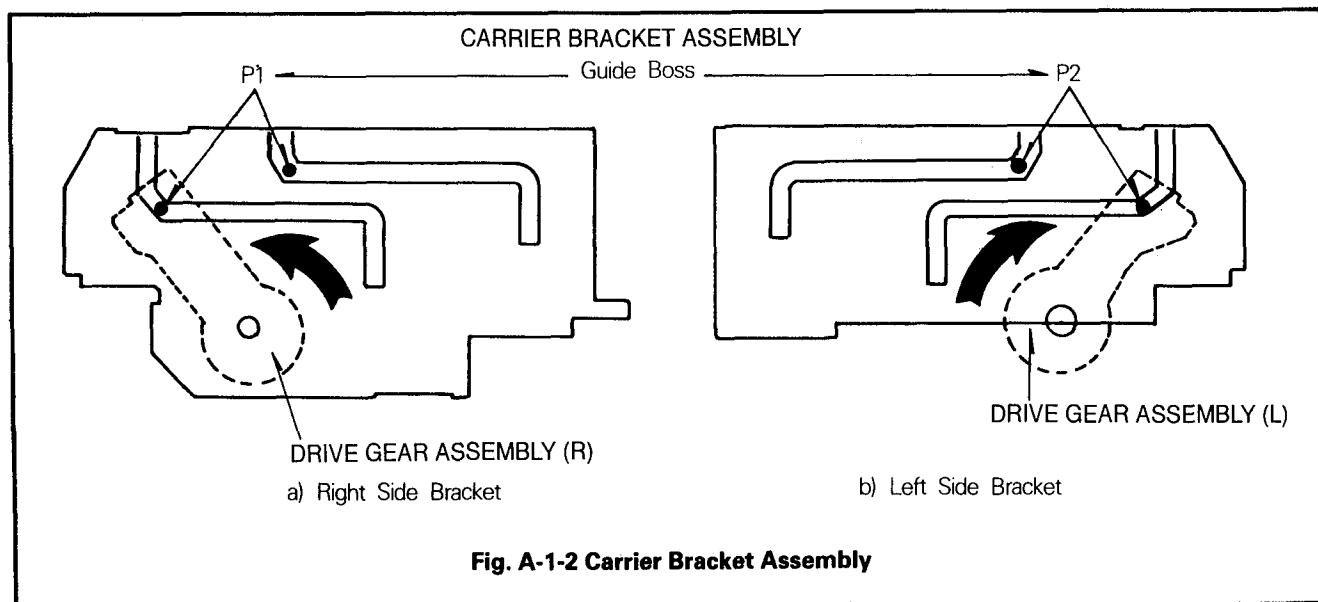


Fig. A-1-2 Carrier Bracket Assembly

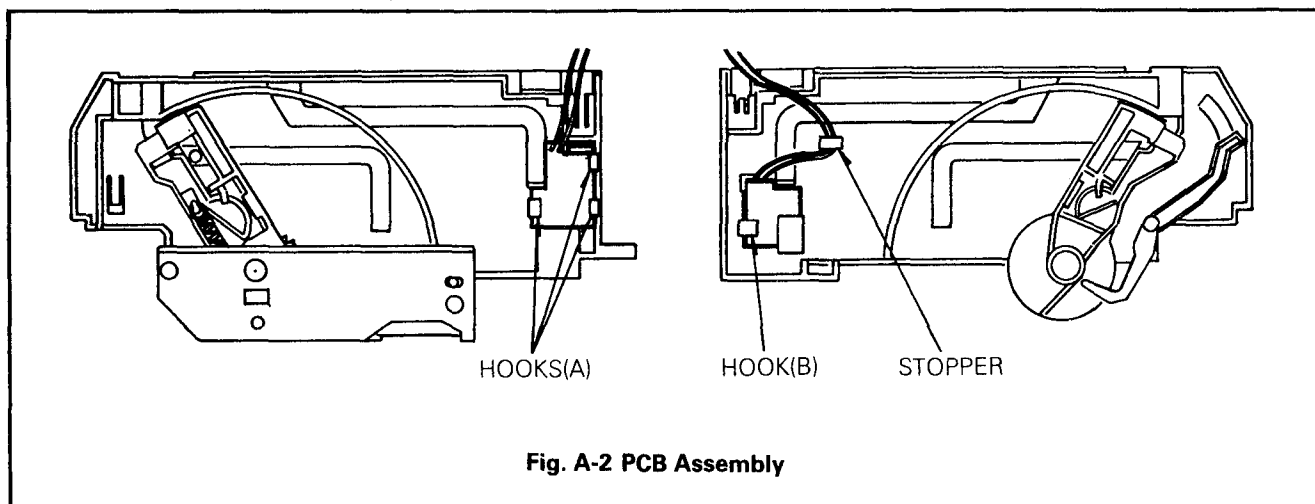
2. PCB(Printed Circuit Board) Assembly

2-1. P.C.B Assembly(R)(Fig. A-2)

- 1) Remove the PCB Assembly(R) by pushing three Hooks (A) outward
- 2) Release the Lead wire from stoppers

2-2. PCB Assembly(L).(Fig. A-2)

- 1) Remove the PCB Assembly(L) by pushing the Hook(B) outward
- 2) Release the Lead Wire from stoppers

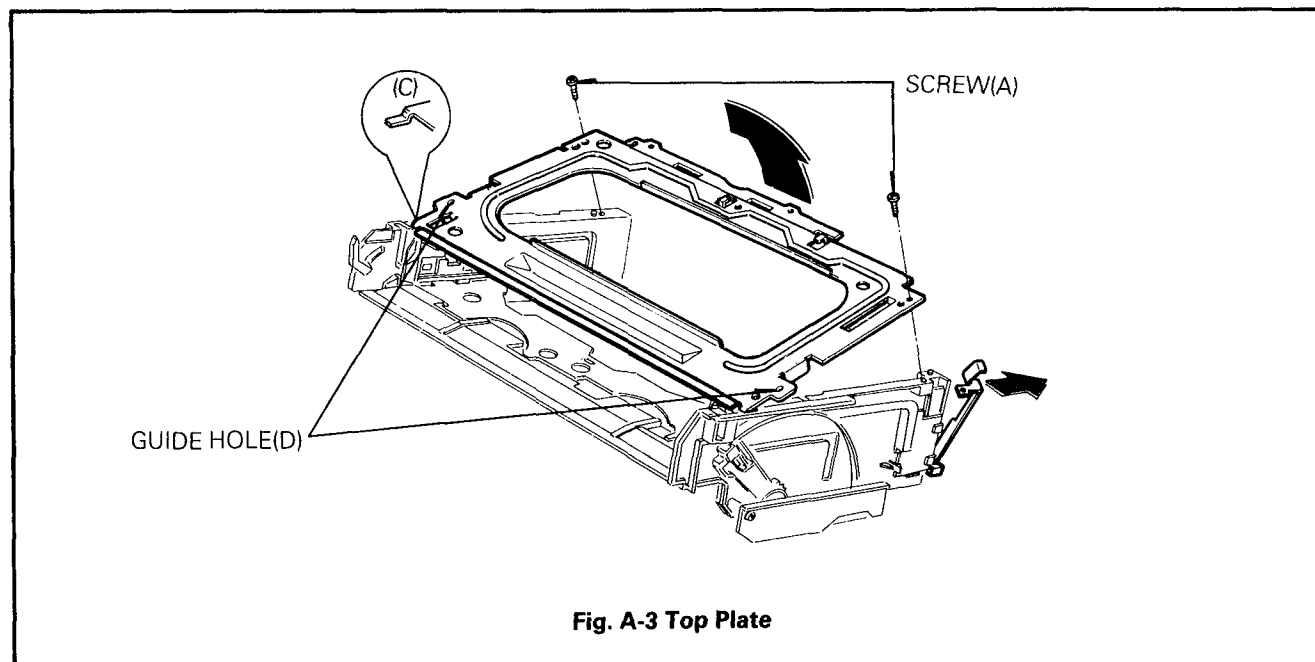


3. Top Plate(Fig. A-3)

- 1) Remove two screws(A)
- 2) Push the upper part of Top plate Ground and then lift up the Top Plate in the direction of arrow(B).

* NOTE

- 1) When reassembling, be certain that the tabs(C) of Top Plate is in both Bracket(L),(R)
- ① Then align the guide holes(D) of Top Plate with Bosses of side Bracket(L),(R)



4. Carrier Bracket Assembly

4-1. Carrier Bracket Assembly(Fig. A-4-1)

- 1) Remove the Carrier Bracket Assembly by moving it in the direction of arrow(C).

* NOTE

- 1) When reassembling, be sure that parts(A) of Carrier Bracket Assembly are seated in parts(B) of Bracket(L),(R)

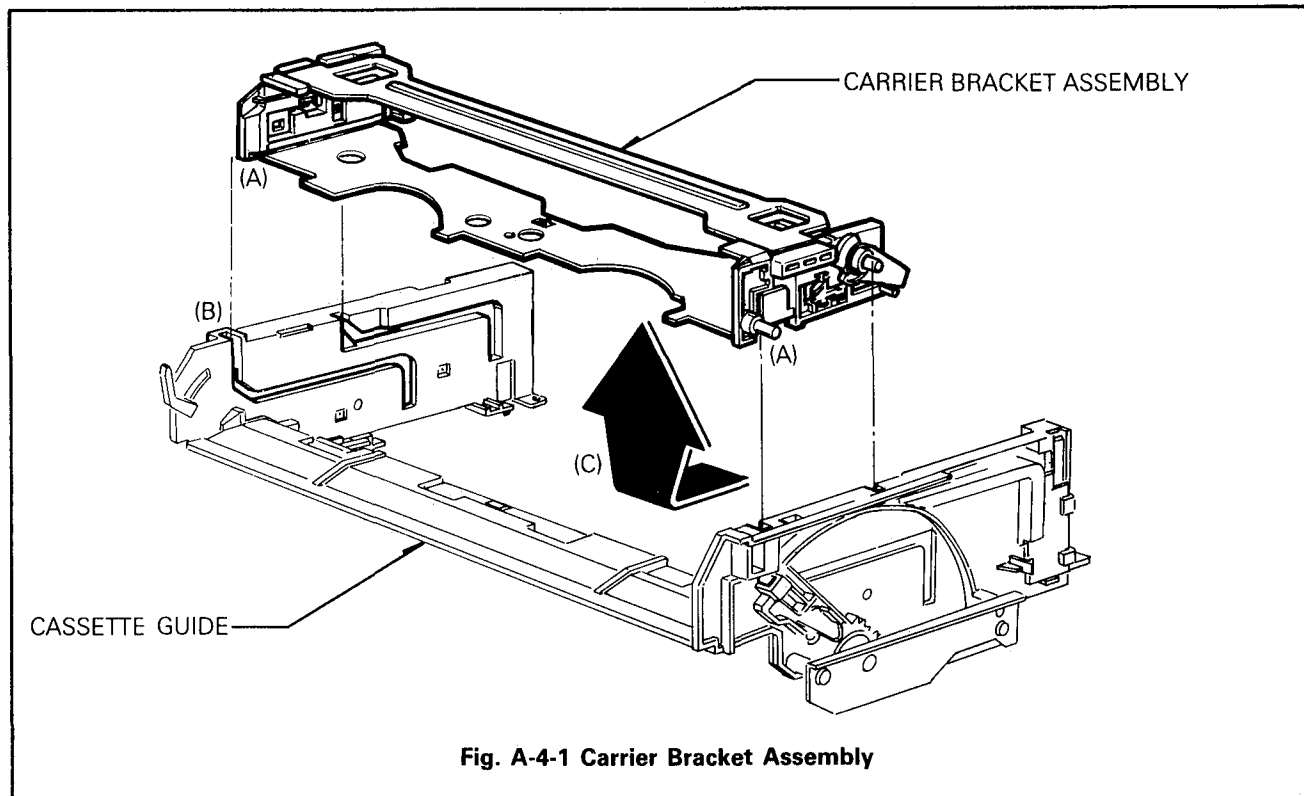


Fig. A-4-1 Carrier Bracket Assembly

4-2. Cassette Opener(Fig. A-4-2)

- 1) Release the spring O C from the Hook(A) and then release it from Hook(C) of cassette opener.
- 2) Remove the cassette opener by releasing the Hook(B) from the Holder(R)

4-3. Rid Opener(Fig. A-4-2)

- 1) Remove the rid opener by pushing it outward.

* NOTE

- 1) When reassembling, seat the upper part of the rid opener in the grooved of Holder(R) and push it inward

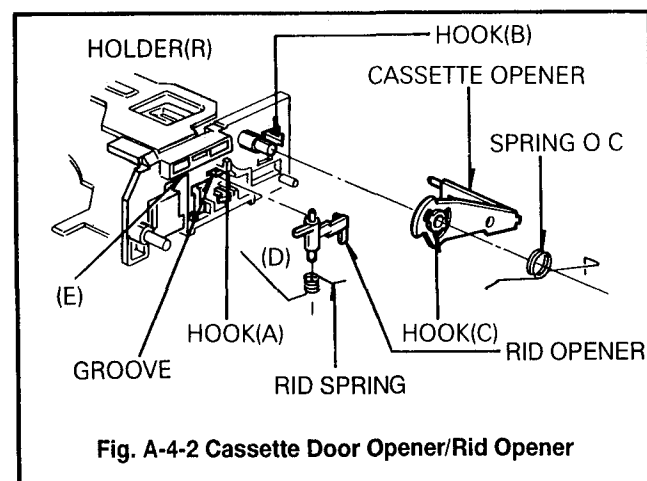


Fig. A-4-2 Cassette Door Opener/Rid Opener

4-4. Detect Lever and Detect Spring

- 1) Remove the spring detect
- 2) Lower the side(A) of Detect Lever and then remove the Detect Lever by pushing it outward

* NOTE

- 1) When reassembling, make sure that the part(C) of Detect Lever set in the part(B) of Holder(R)

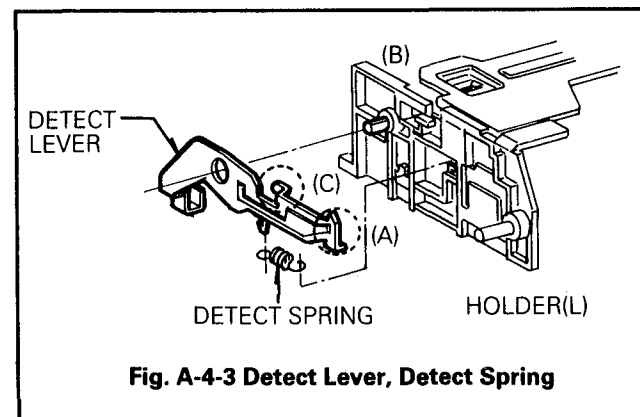


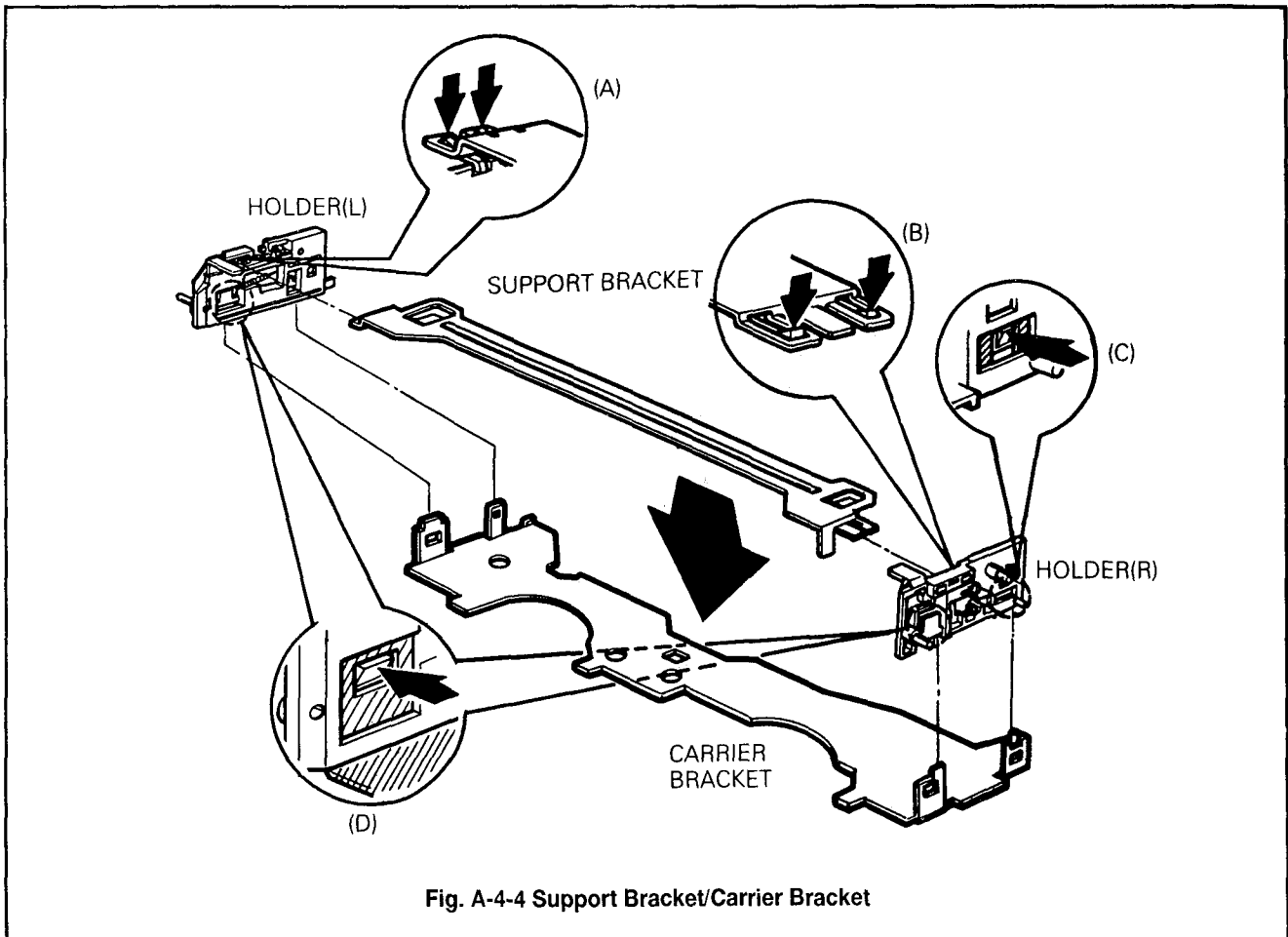
Fig. A-4-3 Detect Lever, Detect Spring

4-5. Support Bracket Assembly(Fig. A-4-4)

- 1) Take the Support Bracket out by releasing hooks(A),(B)

* NOTE

- 1) When disassembling and reassembling, be careful because heavy force can damage the hooks.



4-6. Carrier Bracket Assembly(Fig. A-4-4)

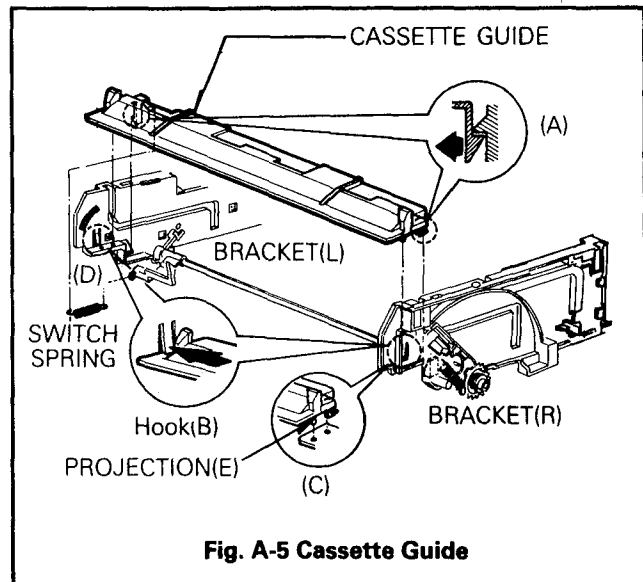
- 1) Remove the Carrier Bracket by releasing hooks(C),(D)

5. Cassette Guide(Fig. A-5)

- 1) Remove the Switch Spring with the Front Loading Mechanism Assembly turned over
- 2) Push two hooks(B) outward
- 3) Remove the Cassette Guide by pushing two hooks(A) outward(if one is removed, the other will be easy to remove)

* NOTE

- 1) When reassembling
 - ① Seat projections(E) of Cassette Guide in holes of Bracket Assembly(L),(R) and then engage the Hook(A).
 - ② After finishing previous step, fix the Cassette Guide to the Bracket Assembly(L),(R) by pushing two hooks(B) inward

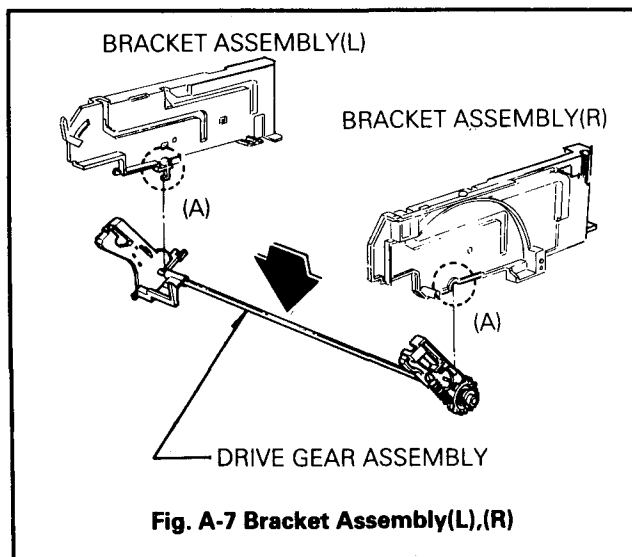
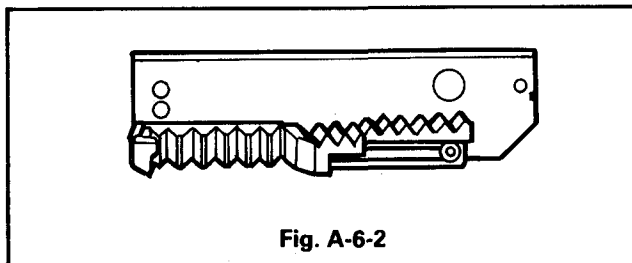
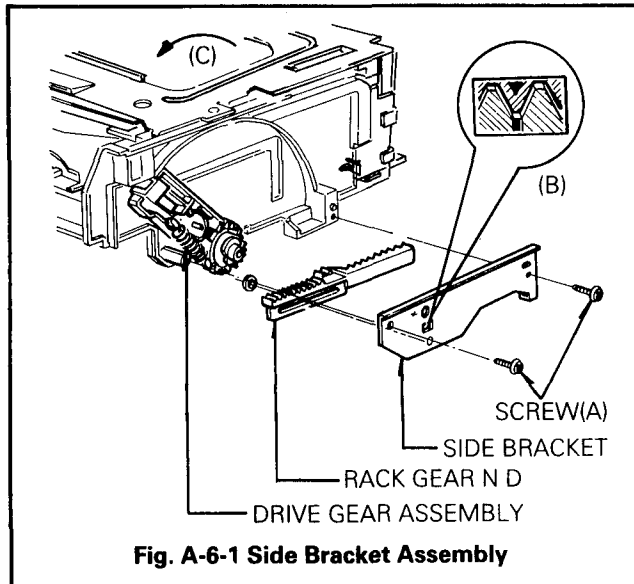


6. Bracket Assembly Side (Fig. A-6-1)

- 1) Remove two screws(A) and then remove the Side Bracket Assembly and the Rack Gear N.D.

*** NOTE**

- 1) When reassembling
 - ① Turn the Drive Gear Assembly in the direction of arrow (C)
 - ② Reassemble the Rack Gear N D to the Side Bracket Assembly, as shown in Fig. A-6-2, and then reassemble



it to the Bracket Assembly(L), This time the Assembling Figure should be the same as(B) at the rectangular hole of Bracket Side

7. Bracket Assembly(L),(R)(Fig. A-7)

- 1) Separate the Bracket Assembly(L),(R) from the Gear Assembly Drive

*** NOTE**

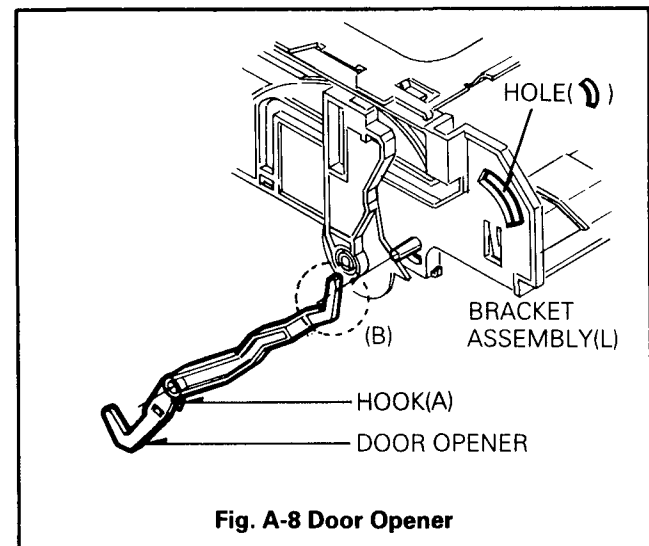
- 1) When reassembling, seat the shaft in the part(A) of Bracket Assembly(L),(R)

8. Door Opener(Fig. A-8)

- 1) Remove the Door Opener by pushing Hook(A) outward

*** NOTE**

- 1) When reassembling, seat the part(B) of Door Opener in the hole() of Bracket(L)

**9. Drive Gear Assembly****9-1. Drive Gear Assembly(Fig. A-9-1)**

- 1) Remove the Drive Gear Assembly from the Bracket Assembly(L),(R)

9-2. Cushion Spring(Fig. A-9-1)

- 1) Remove the cushion spring from the Gear R

9-3. Cap-D(Fig. A-9-1)

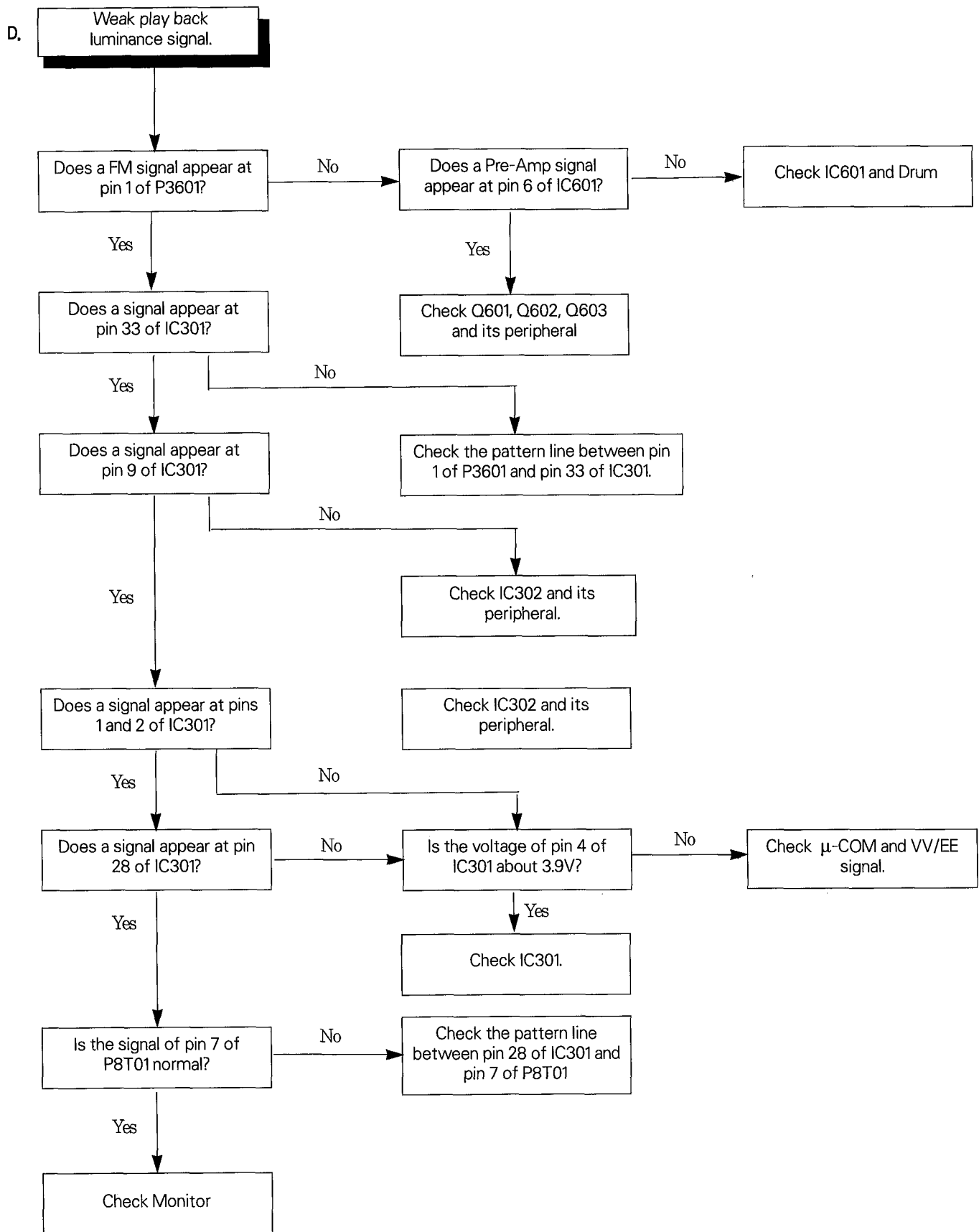
- 1) Remove the Cap-D by lifting it up

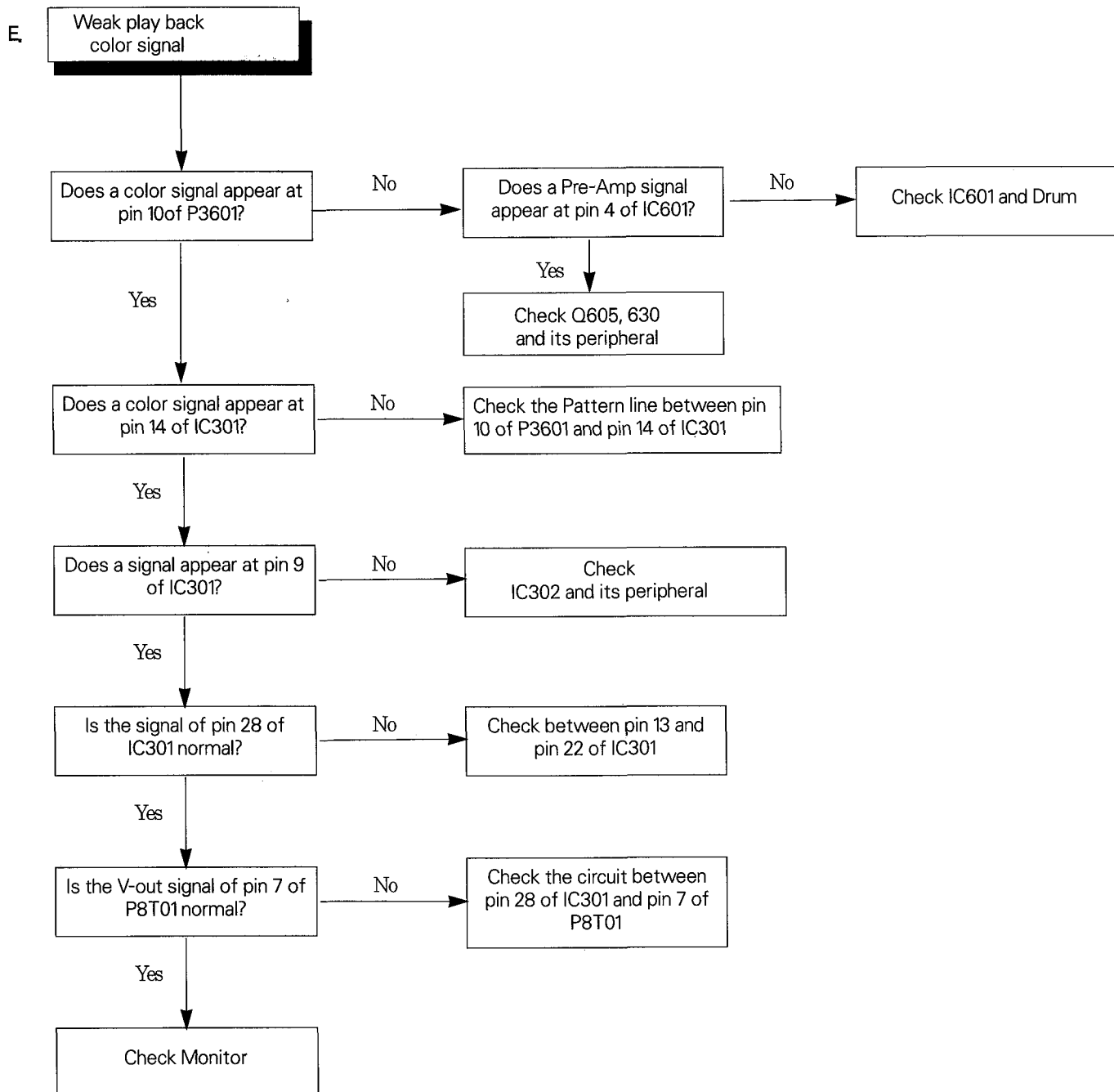
9-4. Spring C.C(Fig. A-9-1)

- 1) Remove the Spring C C from the Gear R

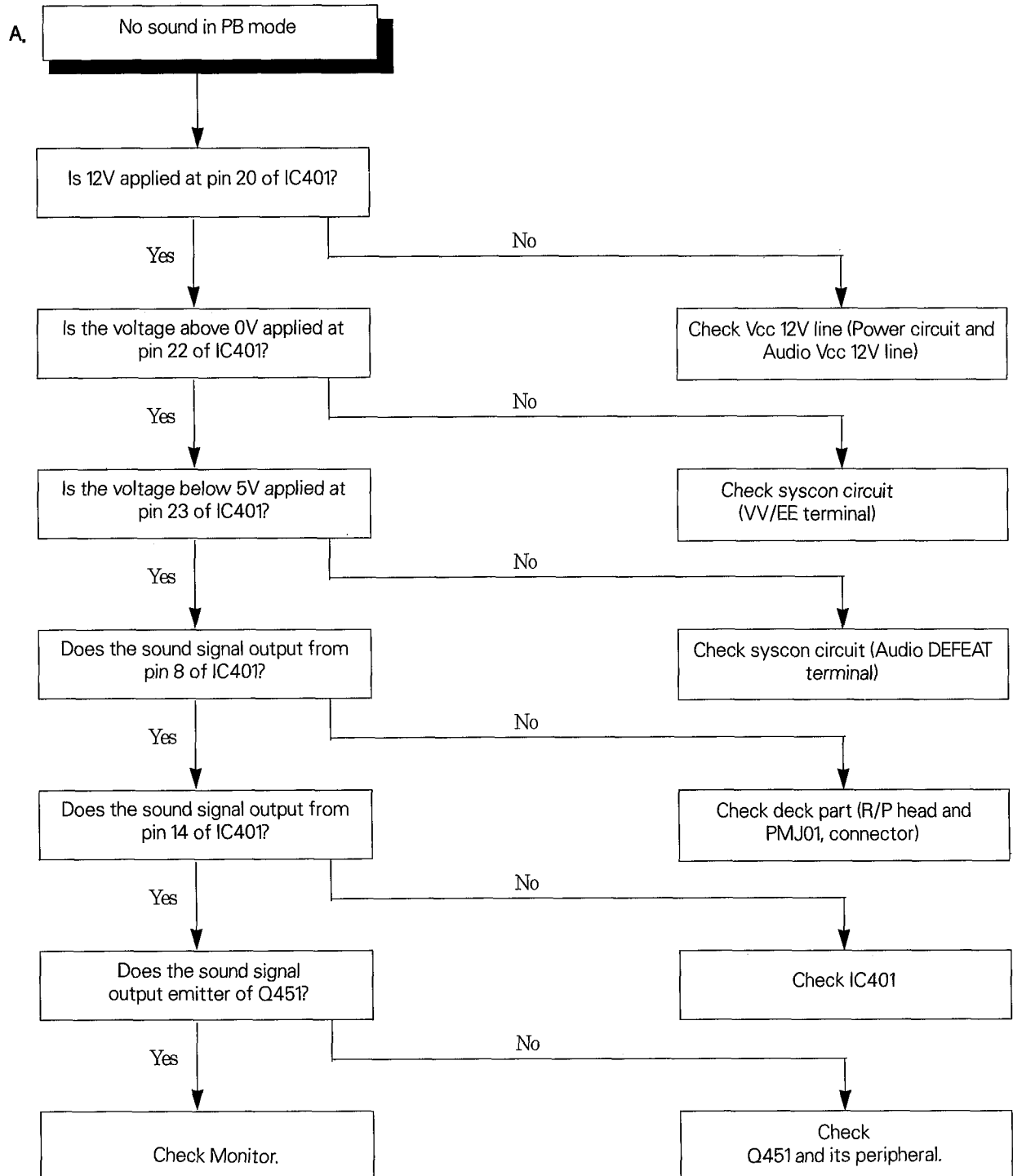
9-5. Gear C(Fig. A-9-1)

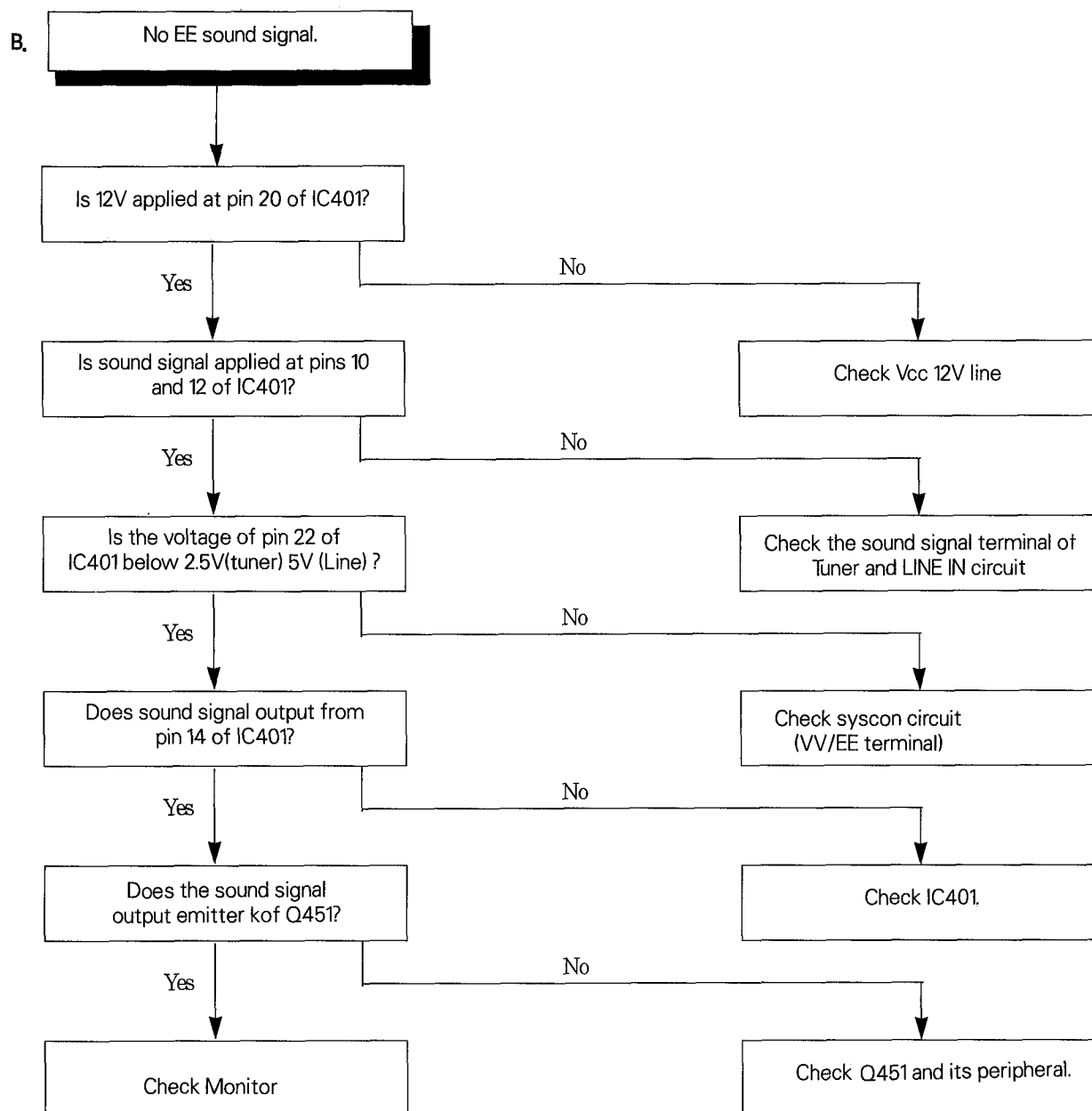
- 1) Remove the Gear C by lifting up when the projection of Gear C is aligned with the hole of Gear R while rotating the Gear C in the counterclockwise direction

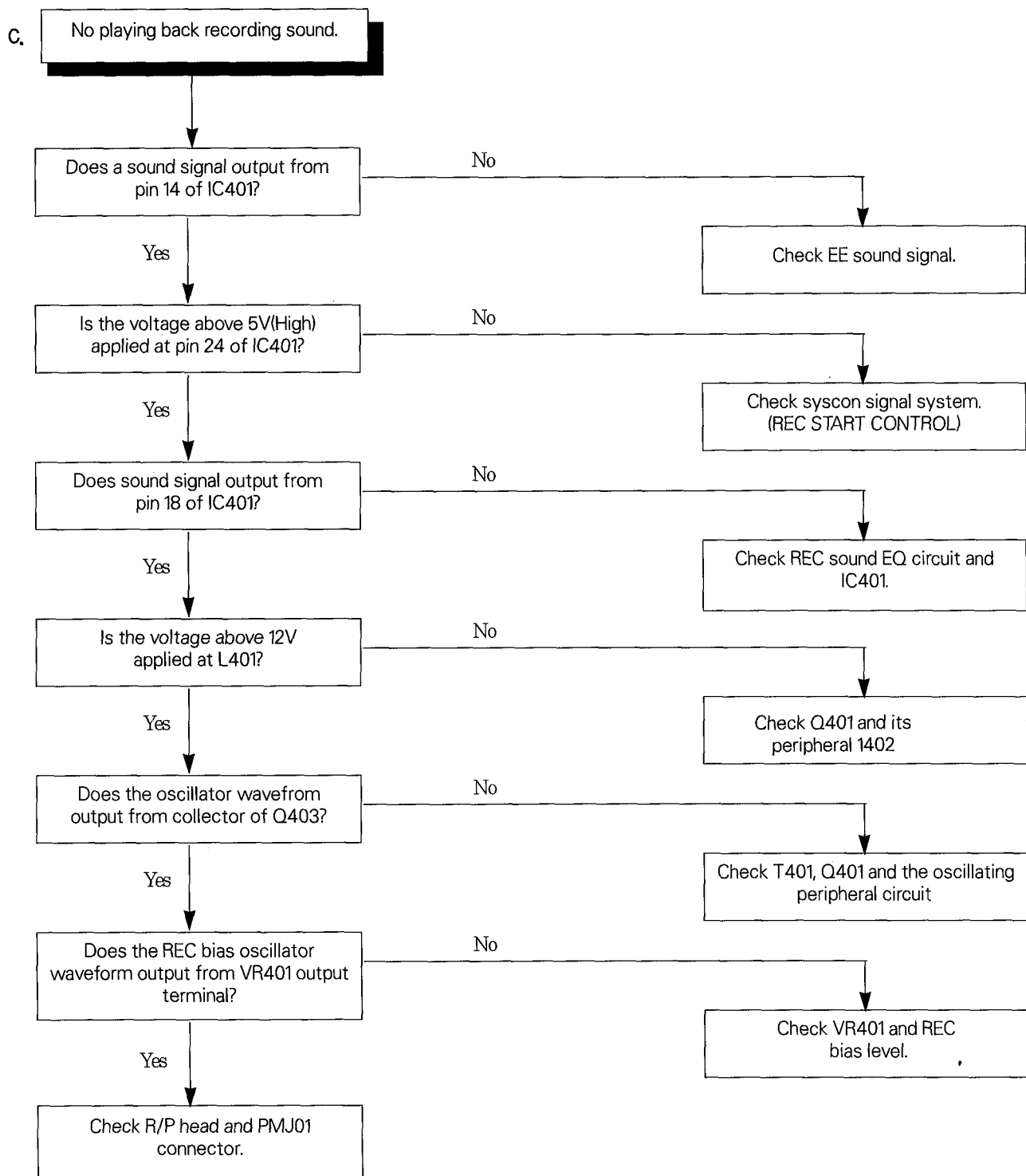




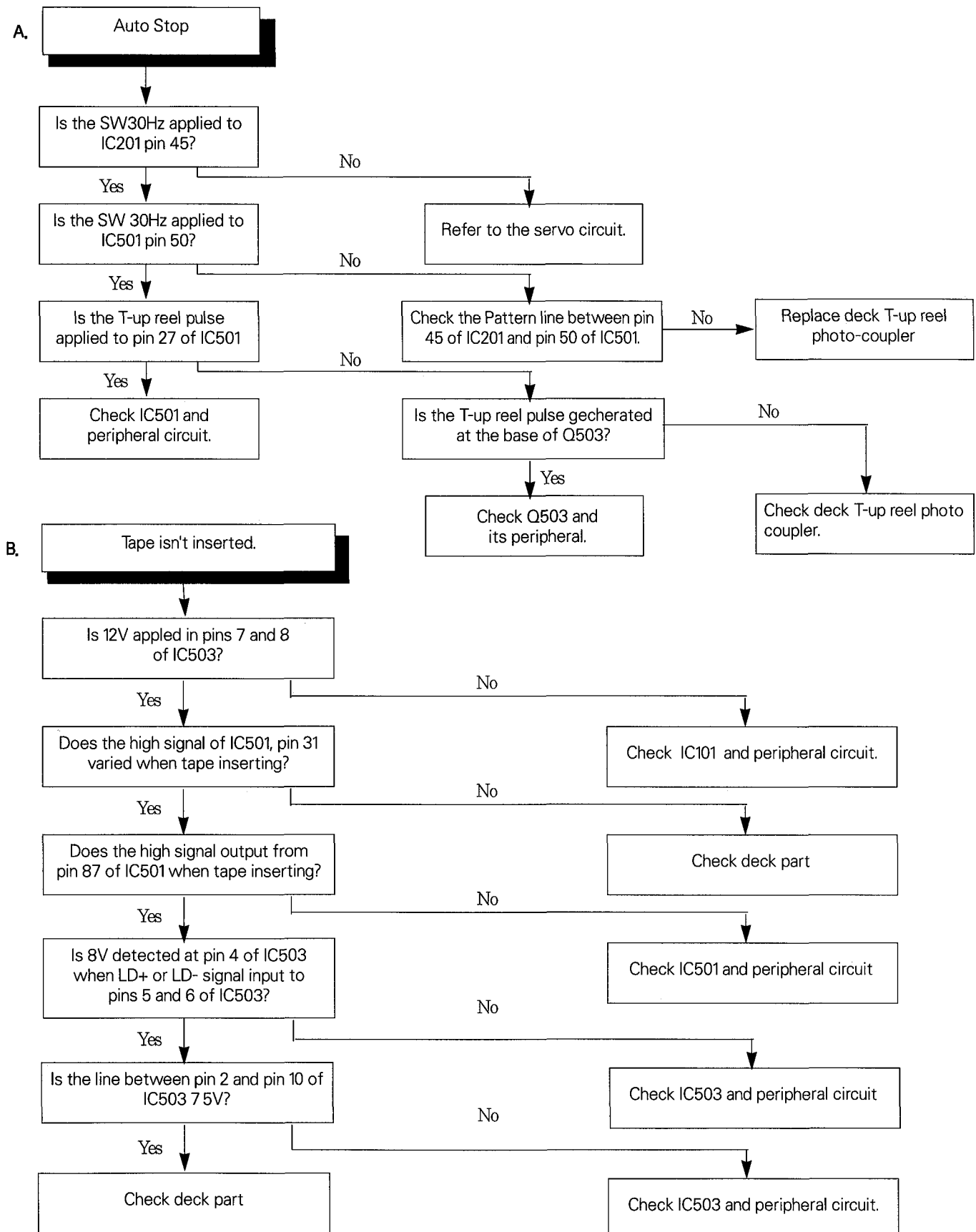
12-6. Audio Circuit



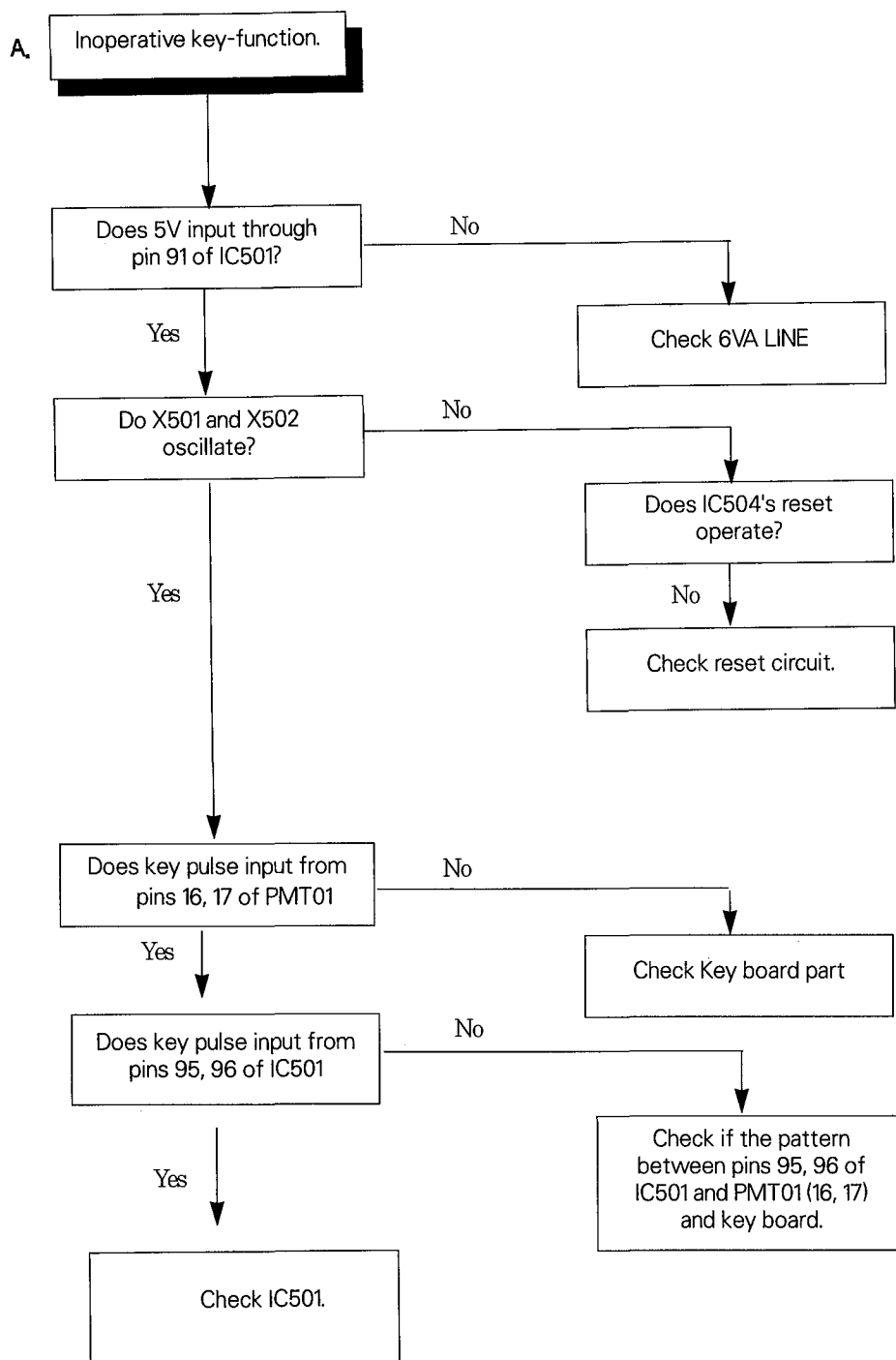




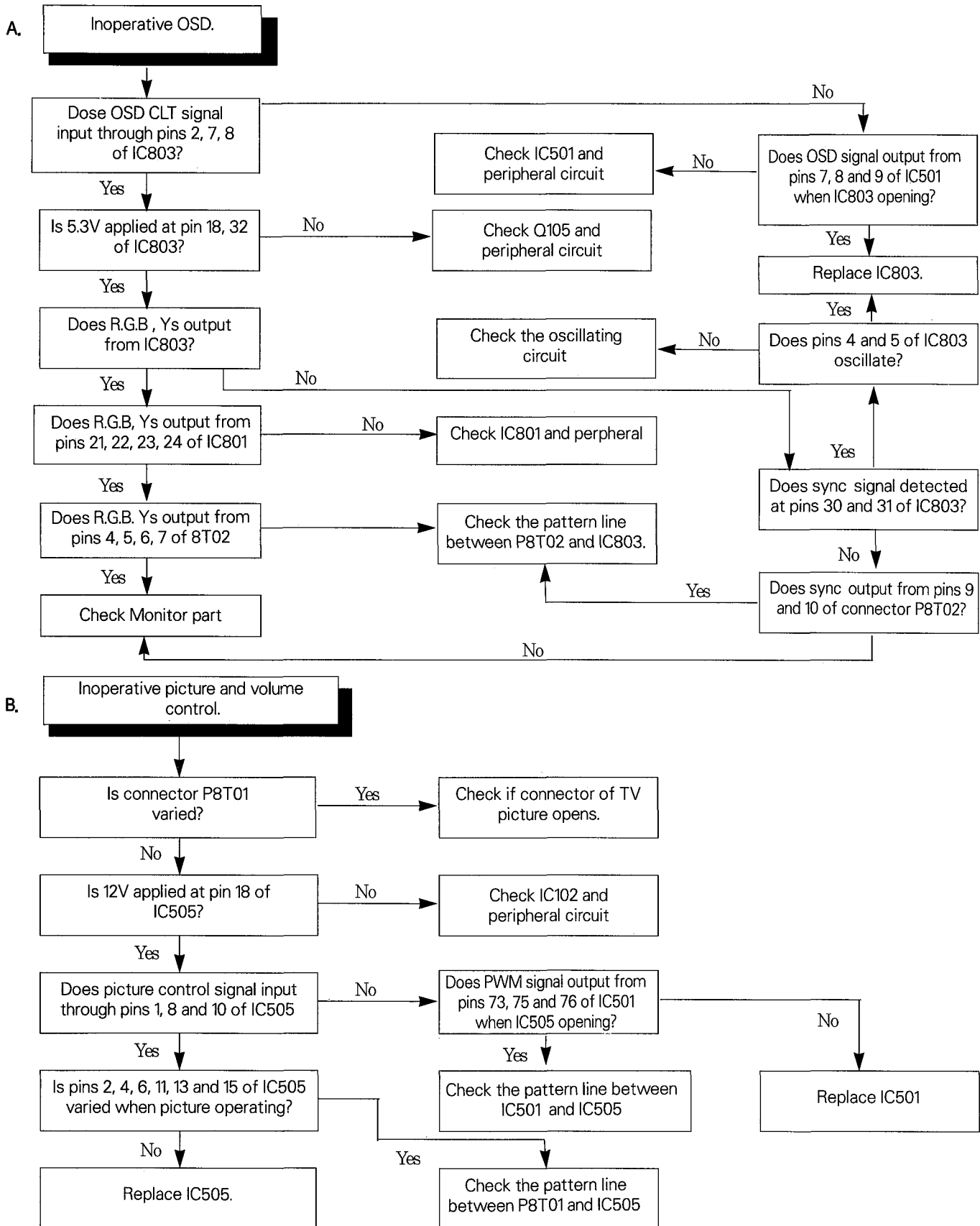
12-7. Syscon Circuit

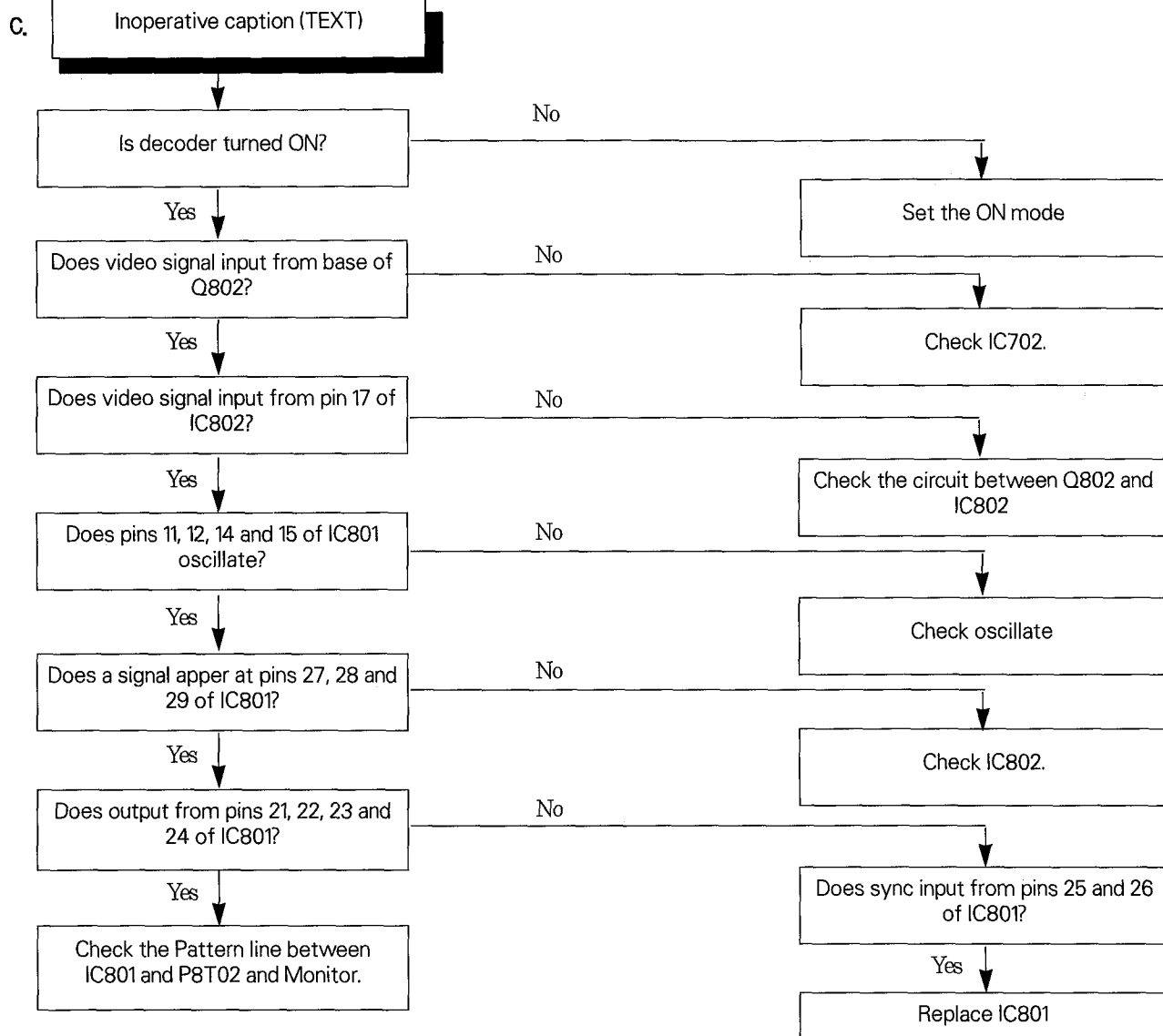


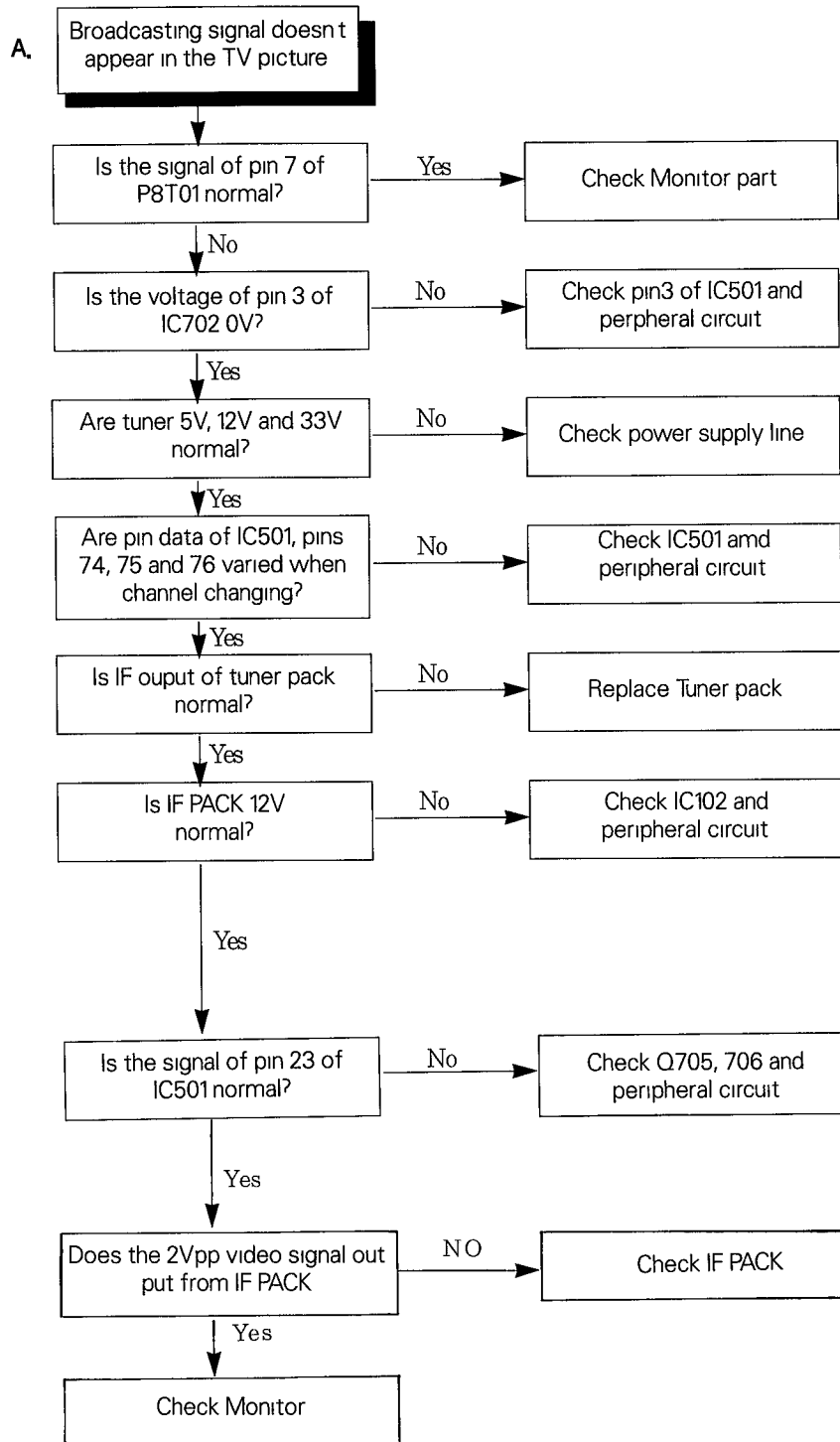
12-8. KEY FUNCTION Circuit

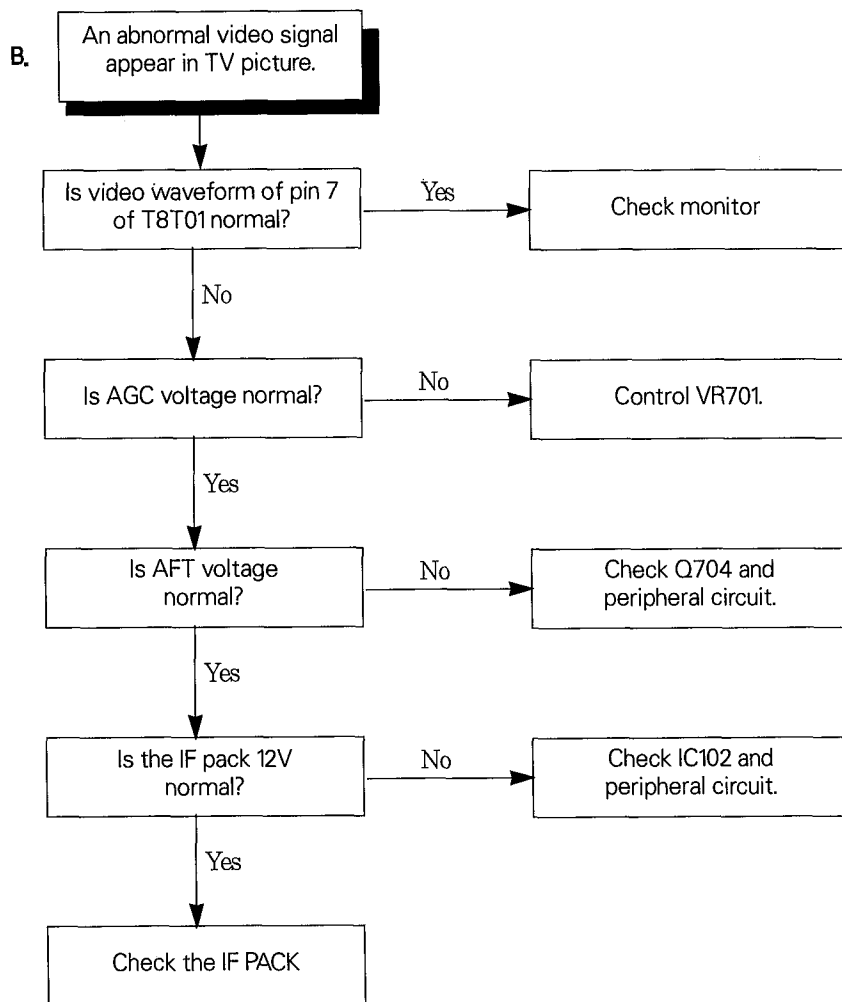


12-9 . CAPTION/OSD





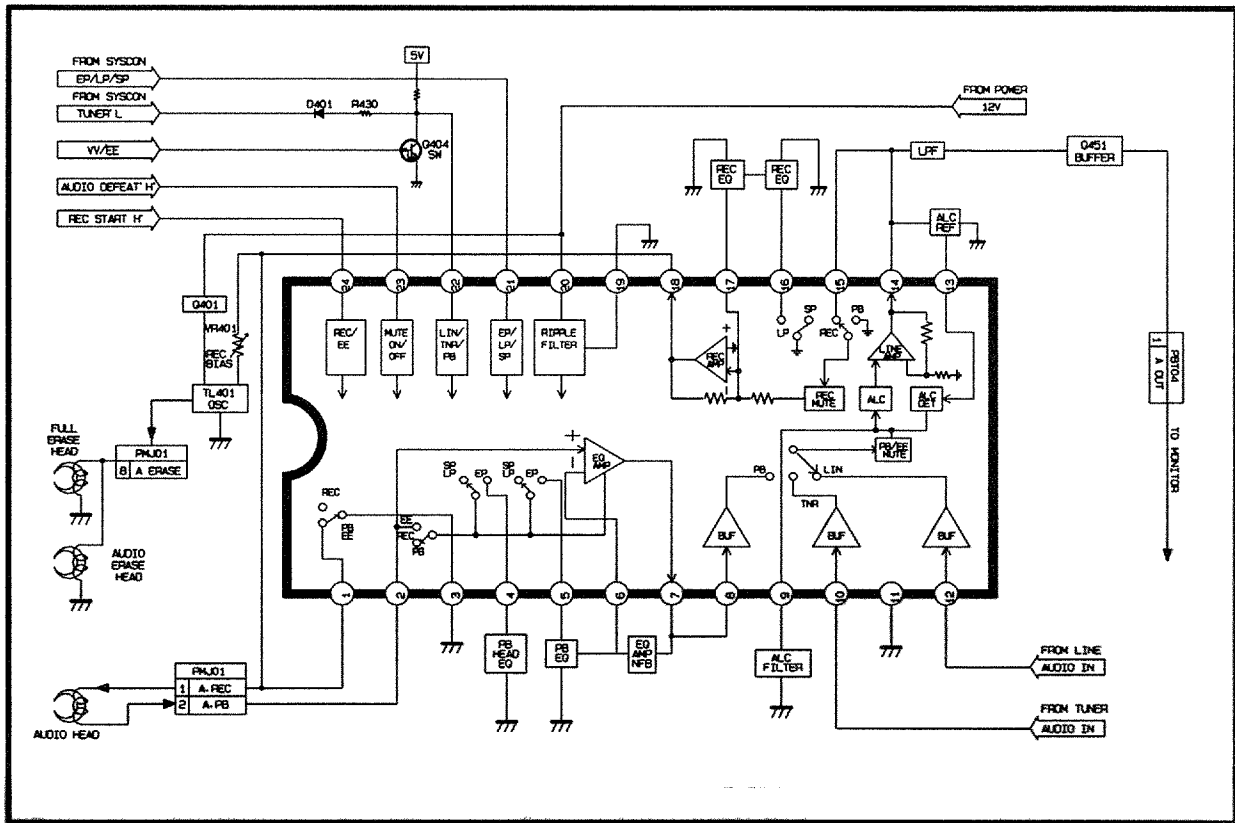
12-10. TUNER/IF Circuit



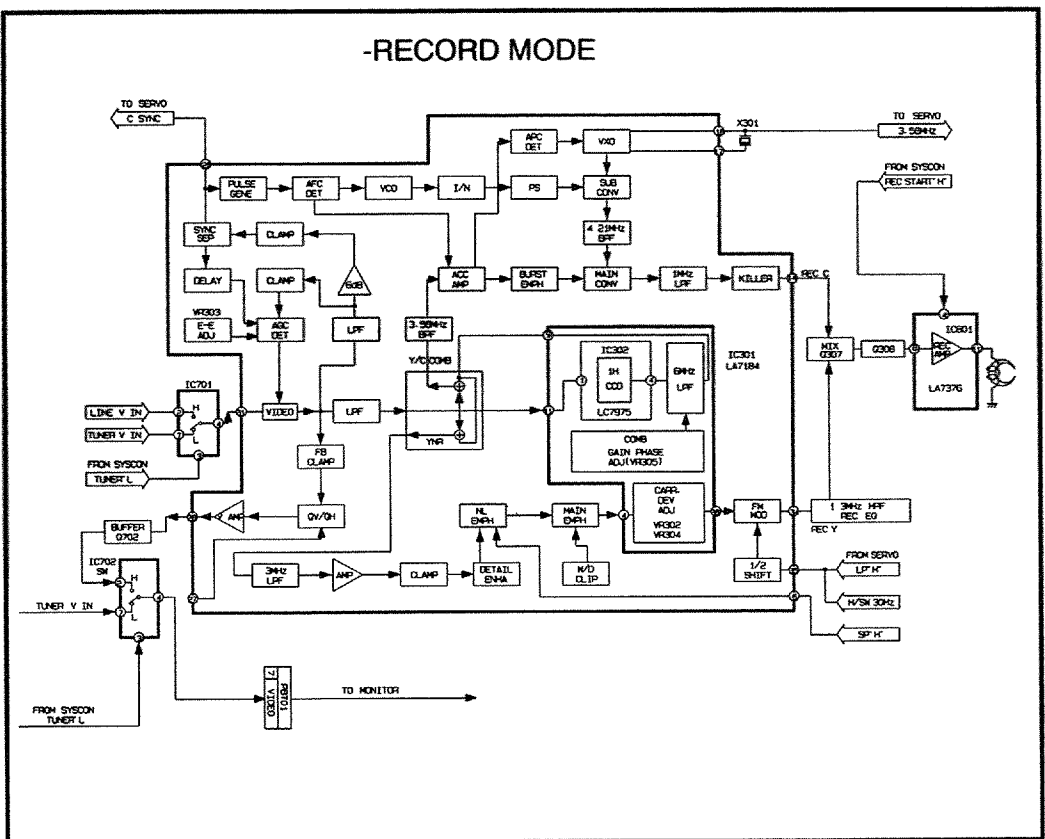
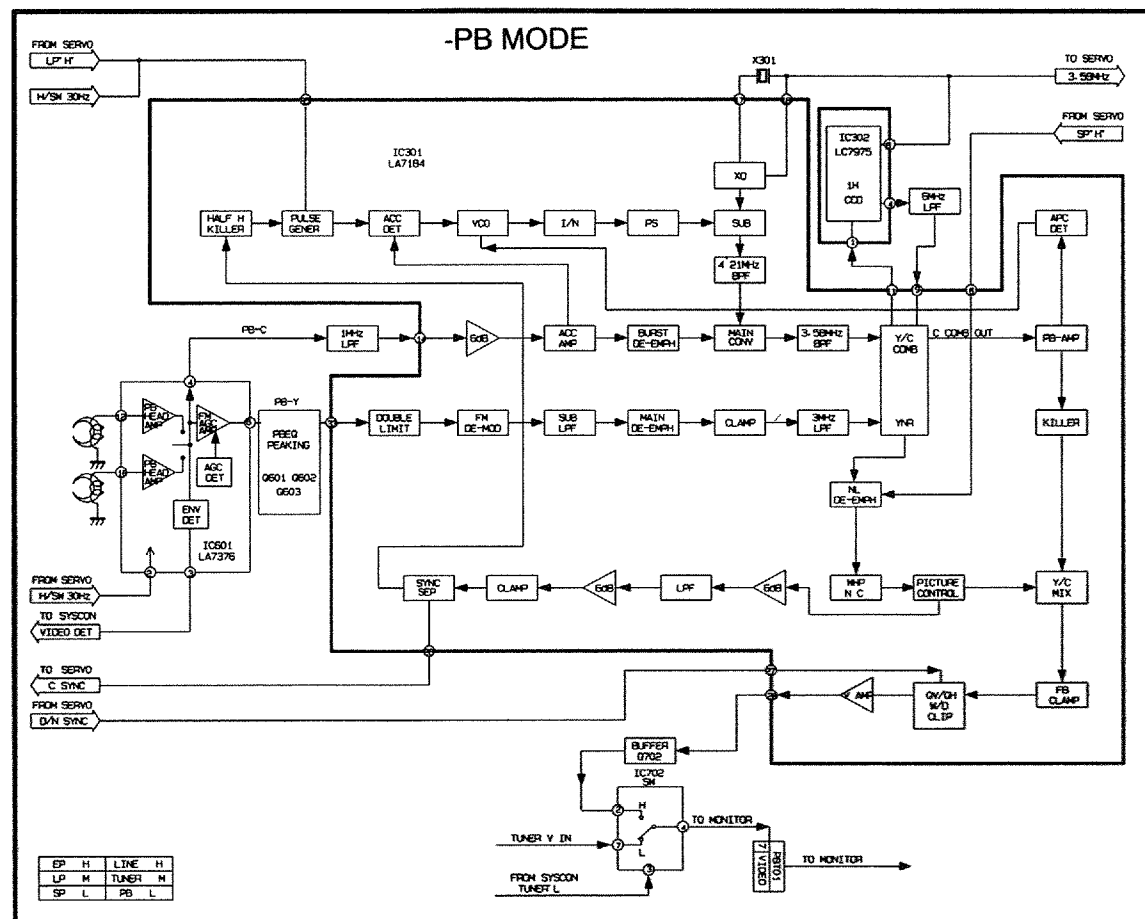
SECTION 13 DIAGRAMS



AUDIO

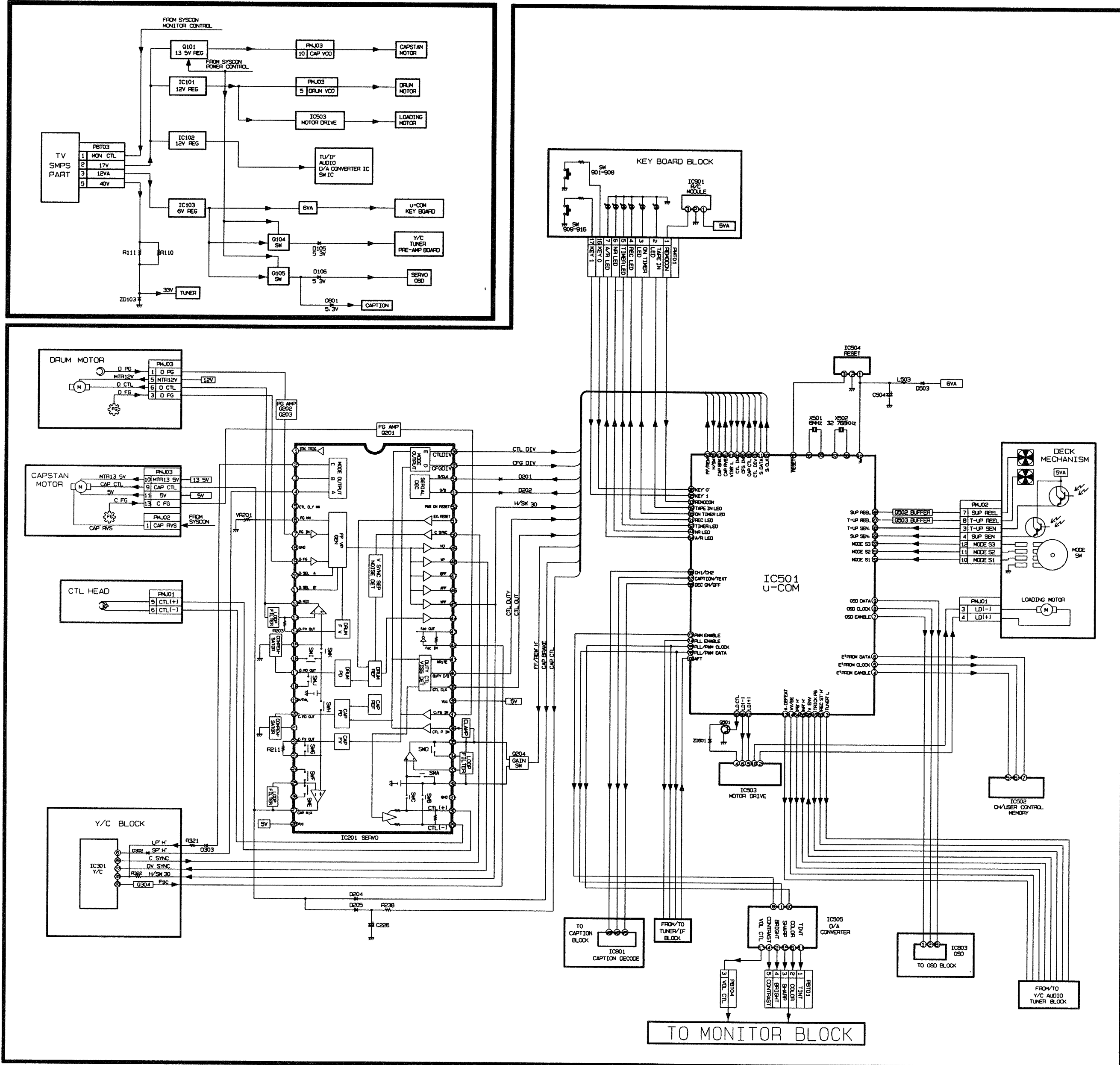


Y/C BLOCK DIAGRAM

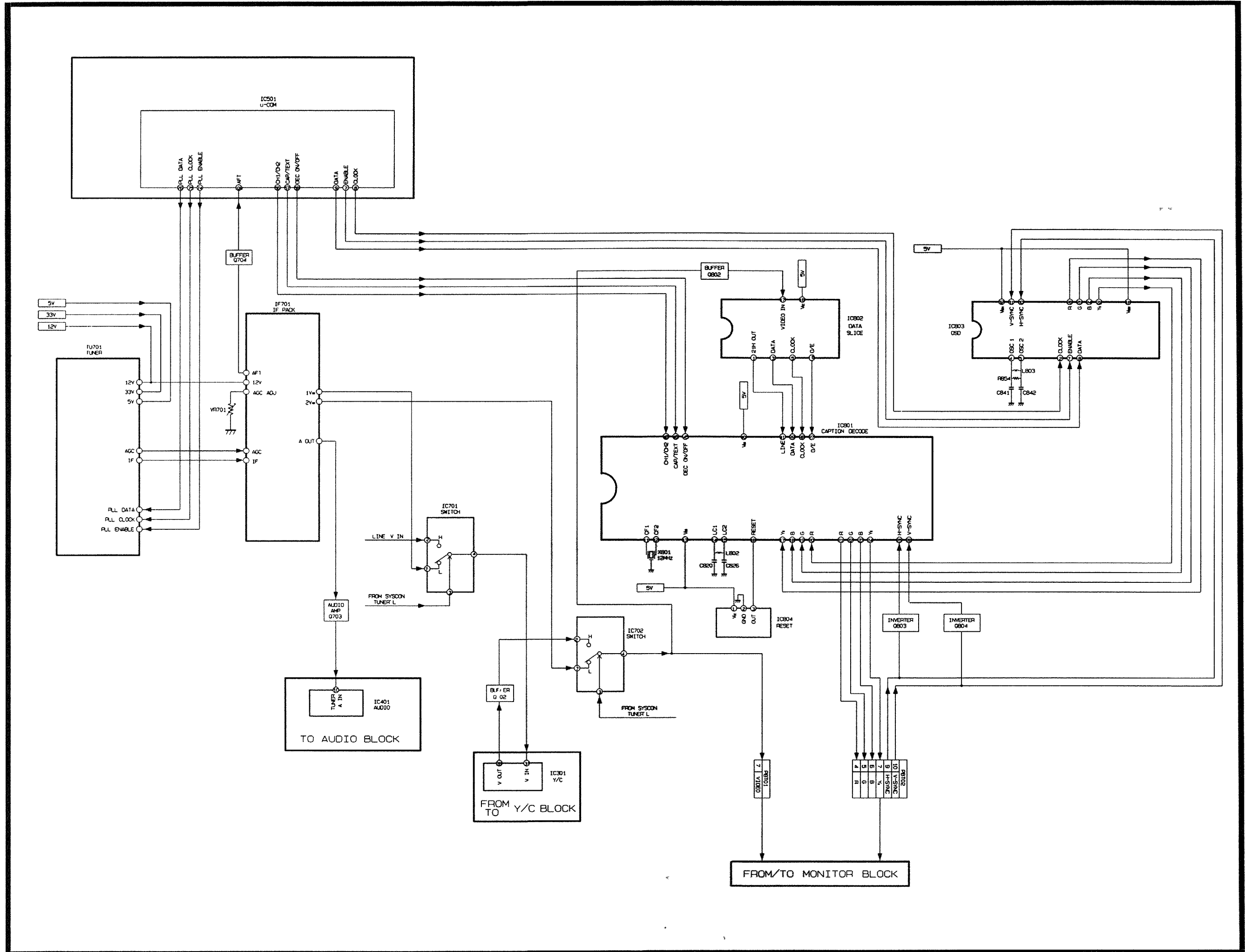


SERVO/SYSTEM CONTROL

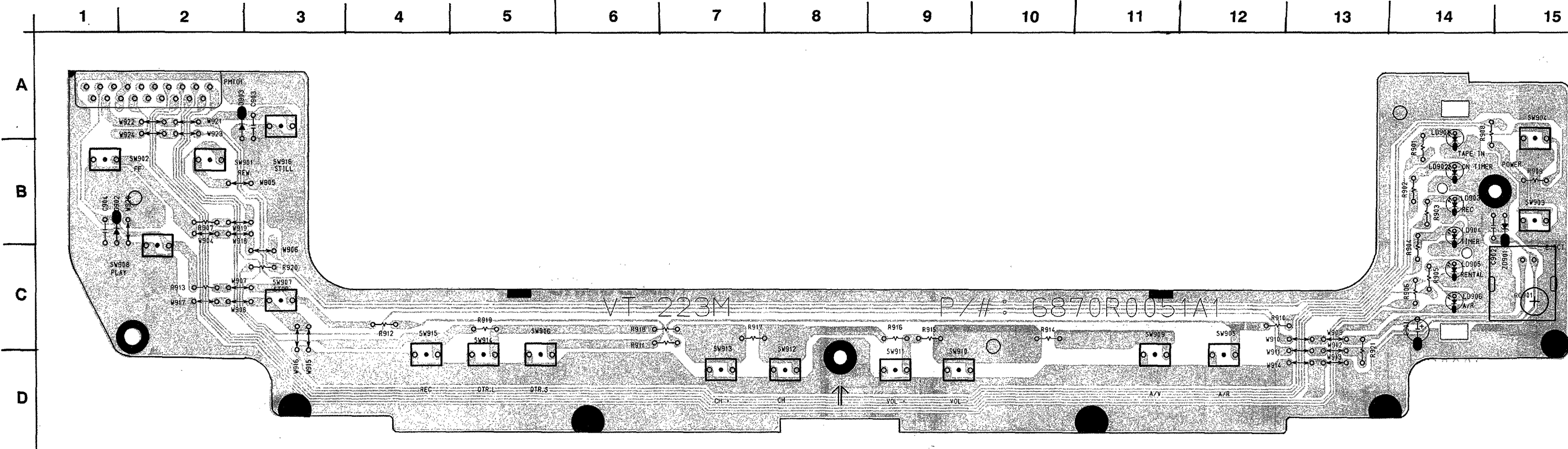
POWER



TUNER/CAPTÌON/OSD

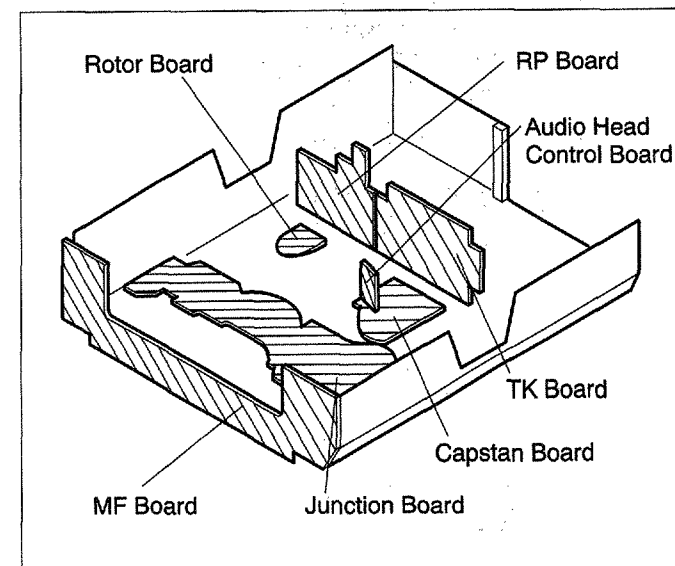


- MF BOARD -



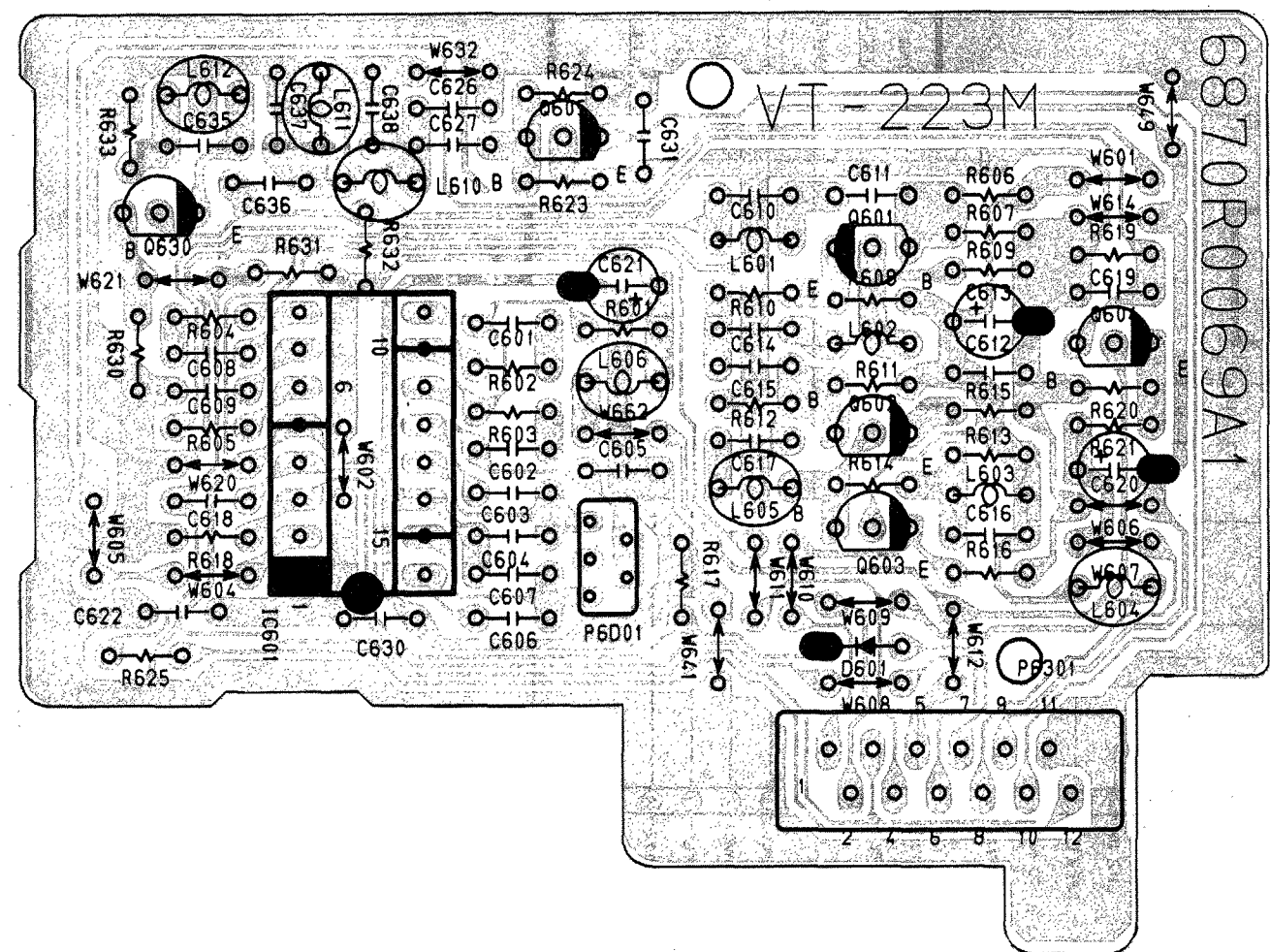
MF BOARD

13-3. Circuit Board Location

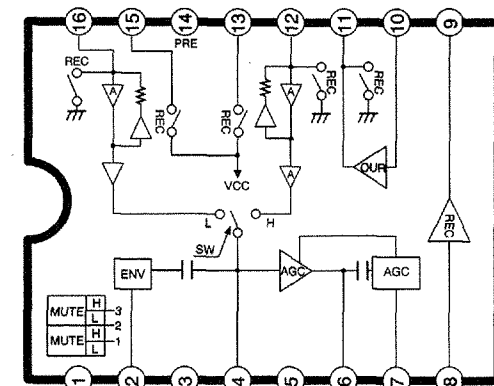


13-4. PCB and Schematic Diagram

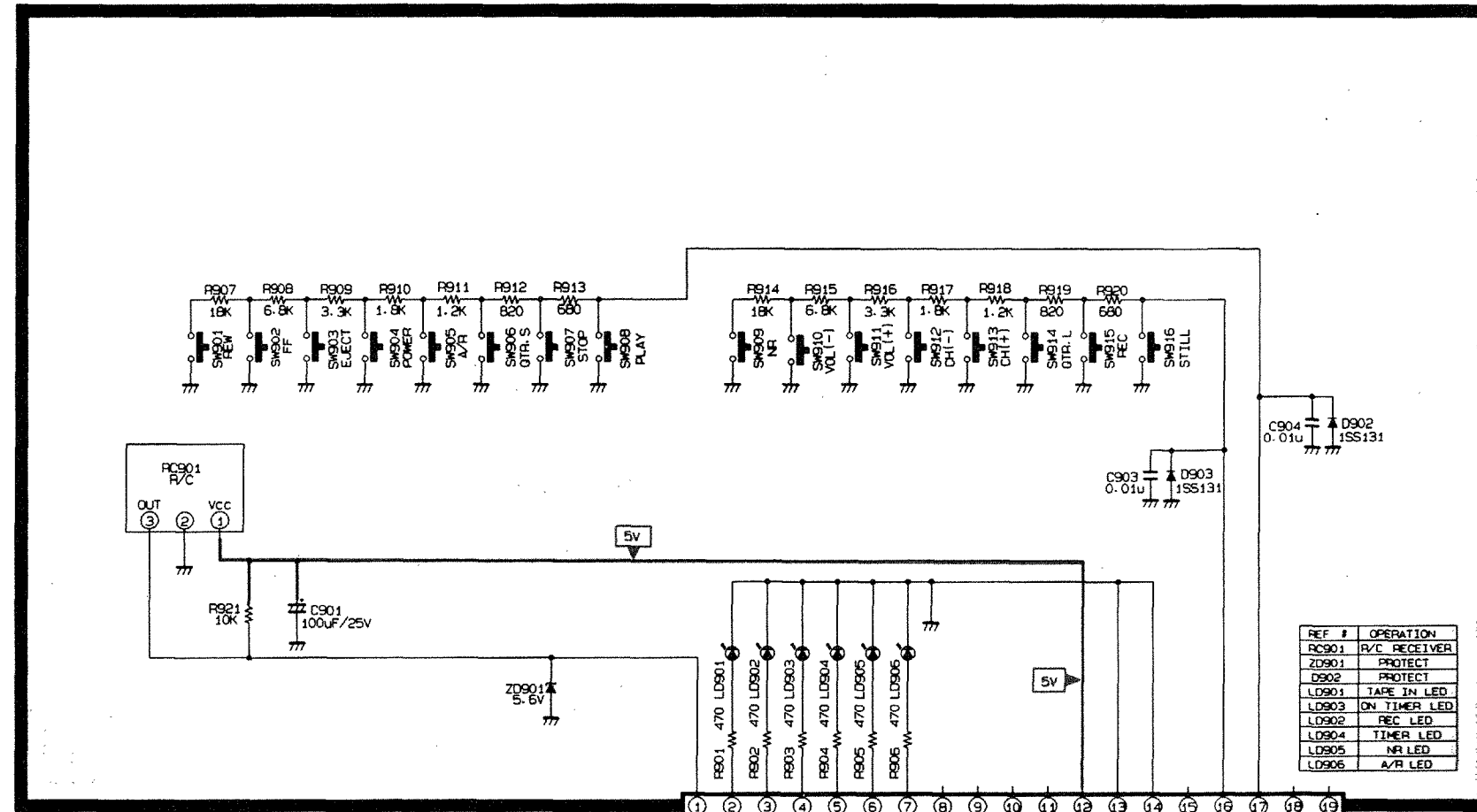
- RP BOARD -



RP BOARD



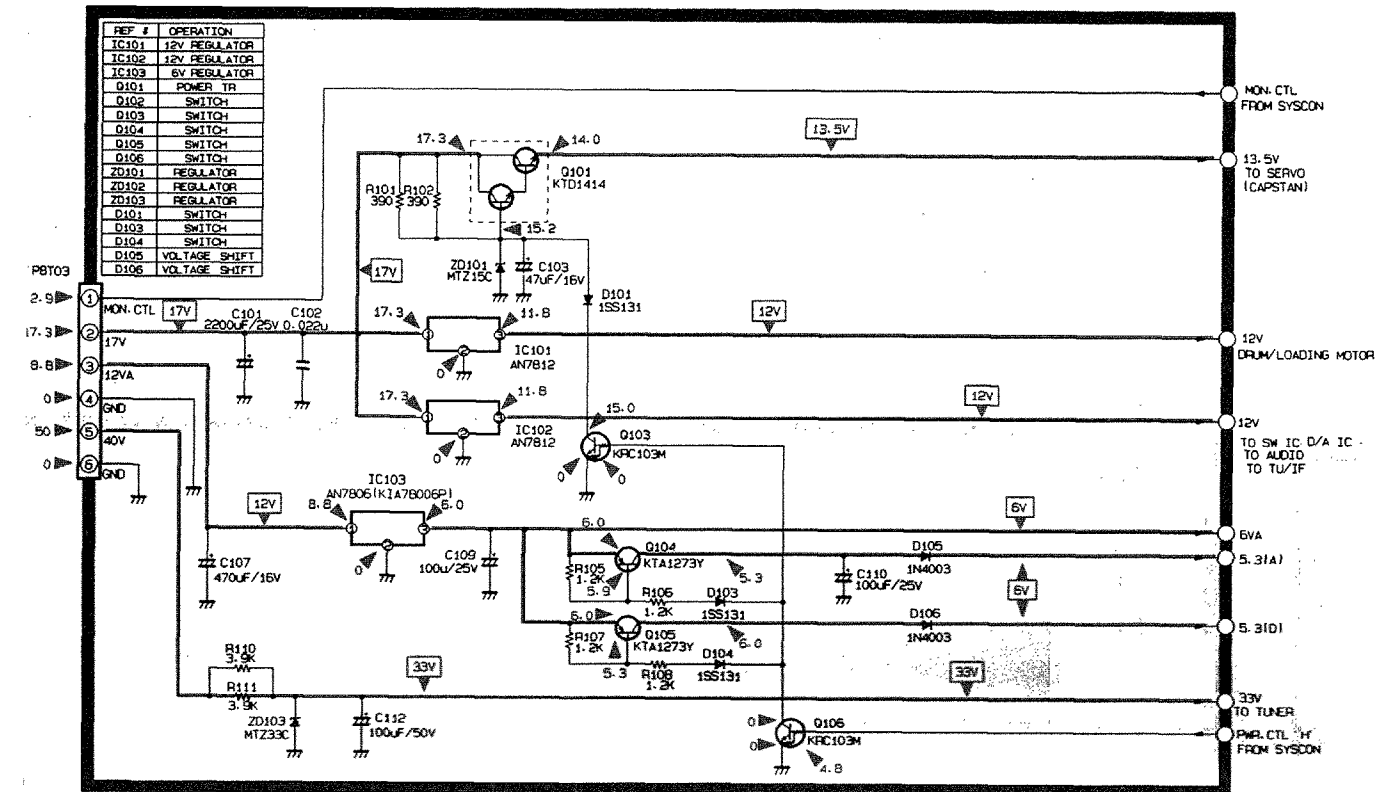
IC LA7376



REMOCON
TAPE IN LED
ON TIMER LED
SW MOUNT
TIMER LED
NR LED
AIR LED
5VA
GND
GND
KEY 0
KEY 1

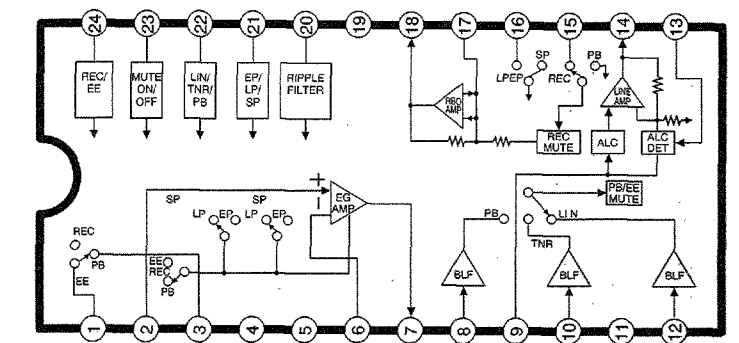
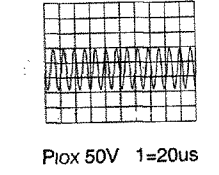
- MA BOARD -

POWER



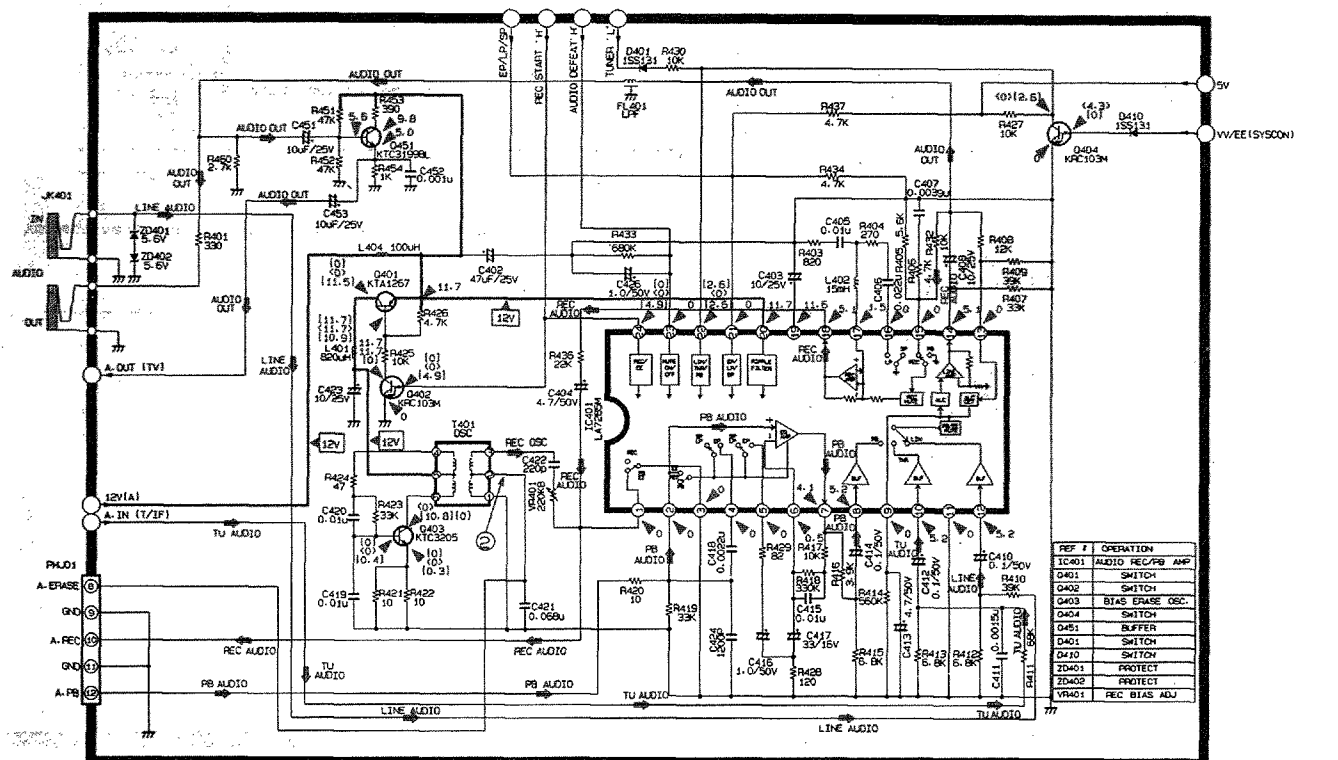
MA BOARD

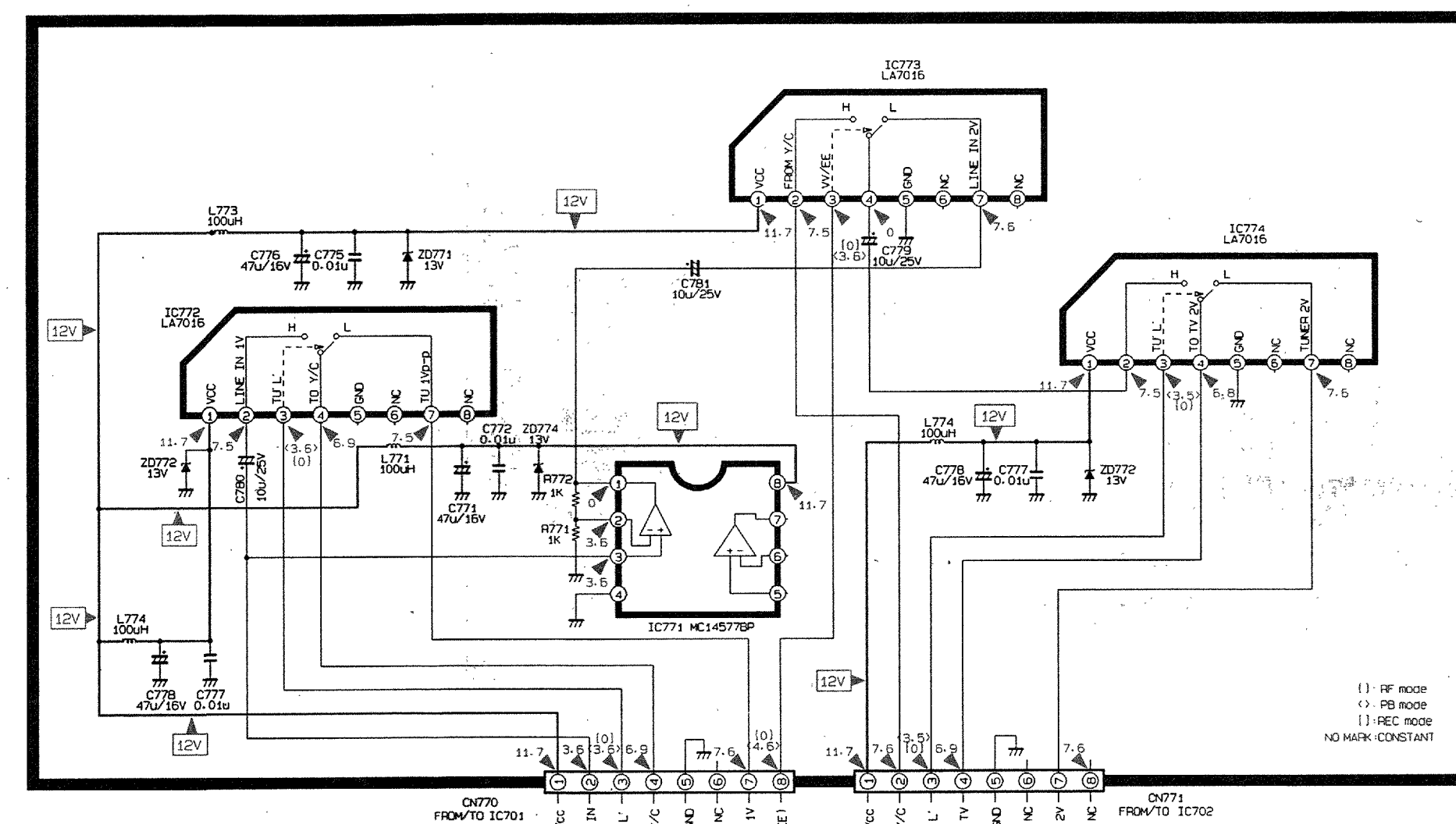
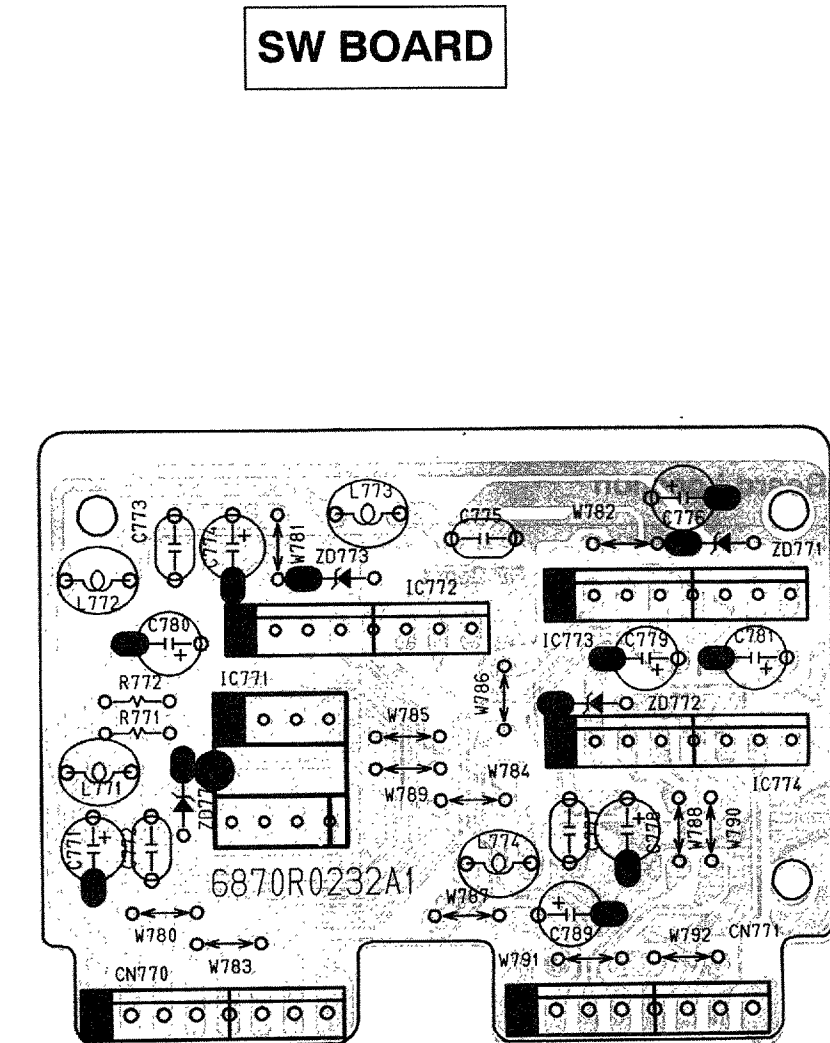
WAVEFORM

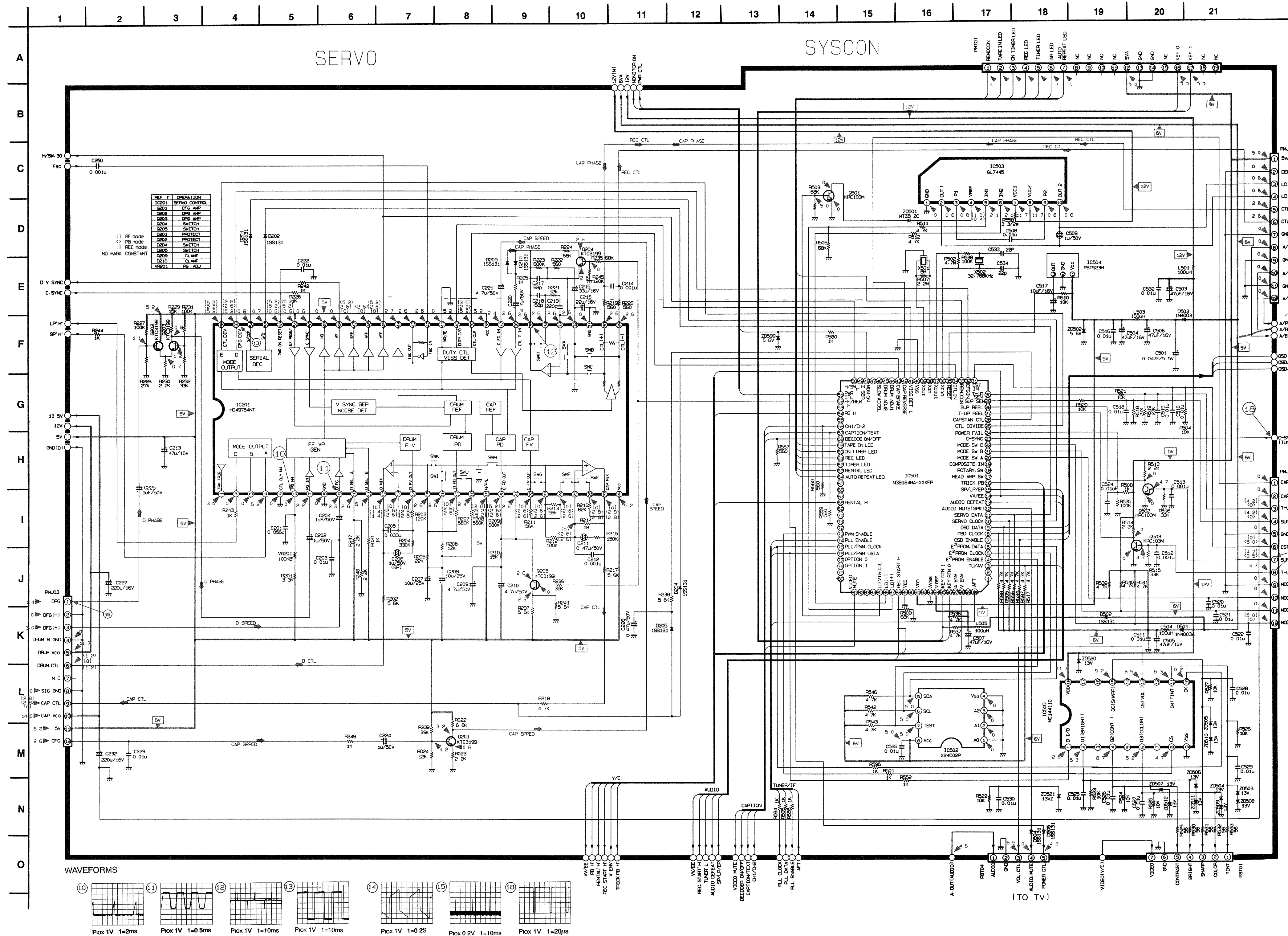


LA7285M
AUDIO IC

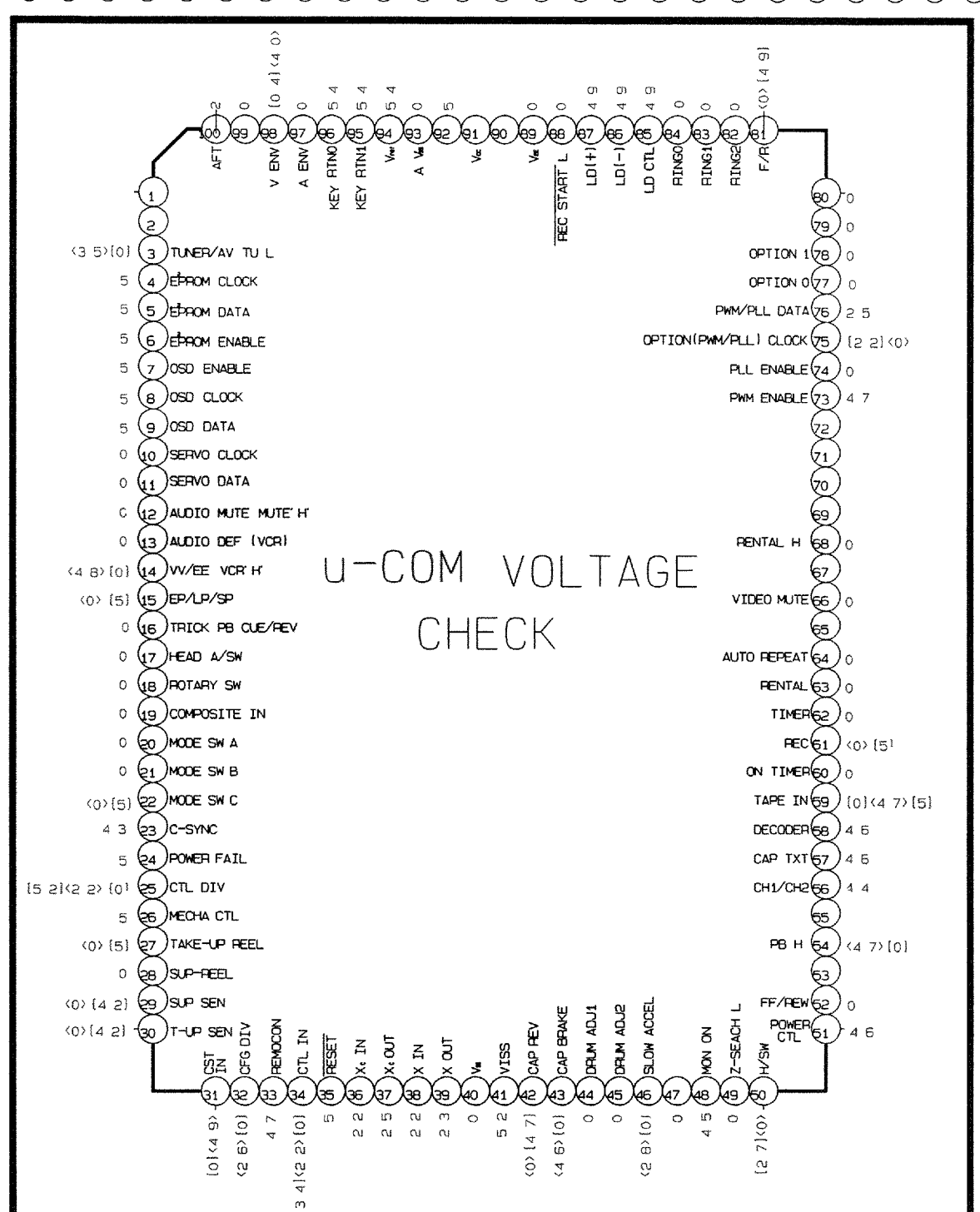
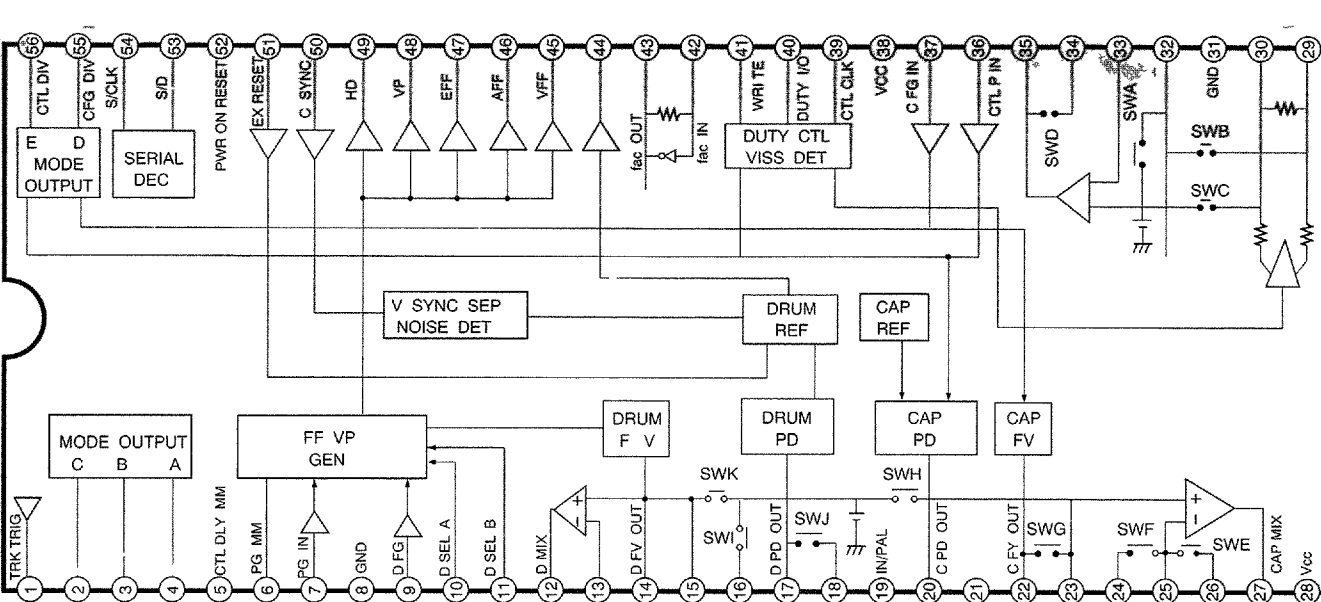
AUDIO

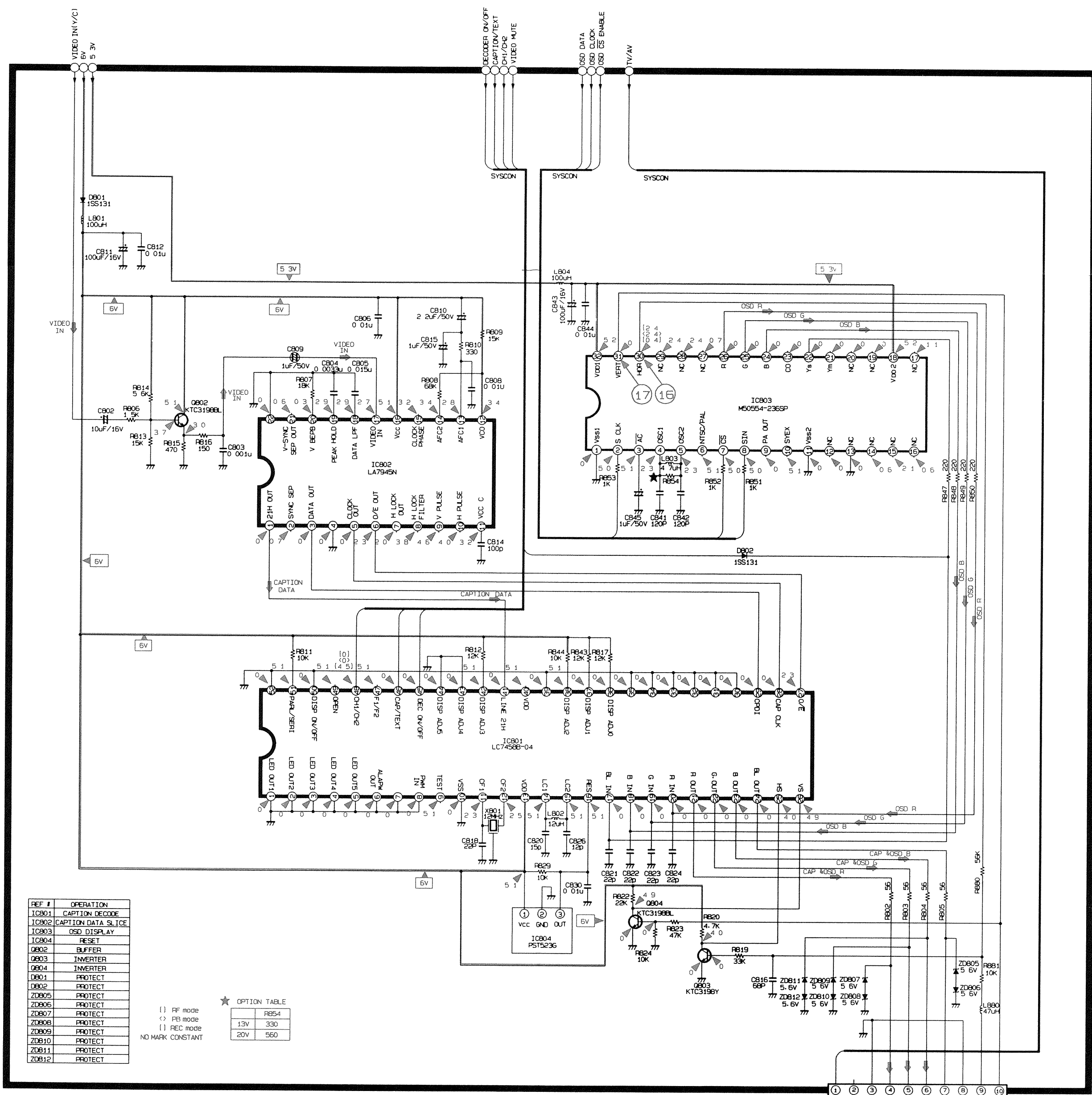






| REF # | OPERATION | REF # | OPERATION |
|-------|------------------------|-------|-----------|
| IC501 | U-COM | ZD502 | PROTECT |
| IC502 | CH/USER CONTROL MEMORY | ZD503 | PROTECT |
| IC503 | LOADING MOTOR DRIVER | ZD504 | PROTECT |
| IC504 | RESET | ZD505 | PROTECT |
| IC505 | D/A CONVERTER | ZD506 | PROTECT |
| DS01 | SWITCH | ZD507 | PROTECT |
| DS02 | BUFFER | ZD508 | PROTECT |
| DS03 | BUFFER | ZD509 | PROTECT |
| DS04 | VOLTAGE SHIFT | ZD510 | PROTECT |
| DS05 | VOLTAGE SHIFT | ZD511 | PROTECT |
| DS03 | VOLTAGE SHIFT | ZD512 | PROTECT |
| DS04 | SWITCH | ZD520 | PROTECT |
| DS05 | SWITCH | ZD521 | PROTECT |
| ZD501 | REGULATOR | ZD599 | PROTECT |

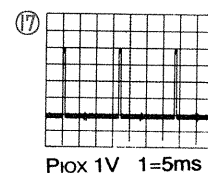
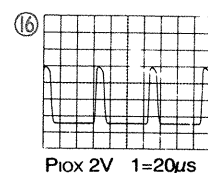


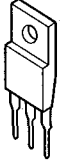
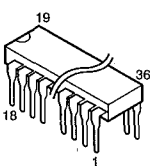
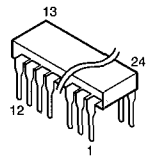
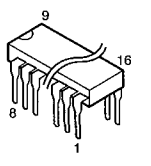
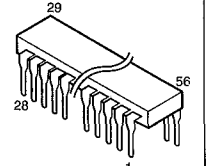
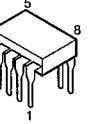
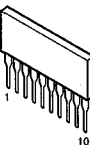
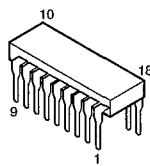
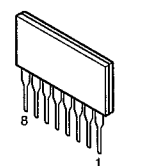
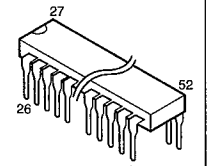
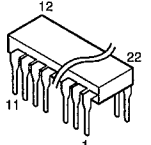
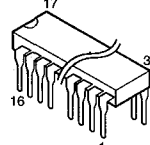


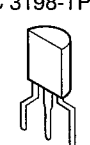



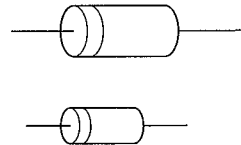


| REF # | OPERATION |
|-------|--------------------|
| IC801 | CAPTION DECODE |
| IC802 | CAPTION DATA SLICE |
| IC803 | OSD DISPLAY |
| IC804 | RESET |
| DB02 | BUFFER |
| DB03 | INVERTER |
| DB04 | INVERTER |
| DB01 | PROTECT |
| DB02 | PROTECT |
| ZDB05 | PROTECT |
| ZDB06 | PROTECT |
| ZDB07 | PROTECT |
| ZDB08 | PROTECT |
| ZDB09 | PROTECT |
| ZDB10 | PROTECT |
| ZDB11 | PROTECT |
| ZDB12 | PROTECT |

☐ RF mode
☒ PB mode
☐ REC mode
 NO MARK CONSTANT

| | |
|-----|--------------|
| ★ | OPTION TABLE |
| | P854 |
| 13V | 330 |
| 20V | 550 |



| | | | | |
|---|--|---|---|--|
| AN7812 KIA78006AP  | LA7184  | LA7285  | LA7376  | HD49754NT  |
| X24C02  | GL7445  | MC 144110  | GL3816 LA7016  | LC 7458B-04  |
| LA7945N  | M50554-236SP  | PST-523G  | PST-523H  | KTC 3198-TP-Y KTC 3198-TP-BL  |
| KTC 3199-BL KTA 1267-GR  | KTC 3205-TP-Y  | KTD 1414- POWER  | 1SS131 IN 4003  | |

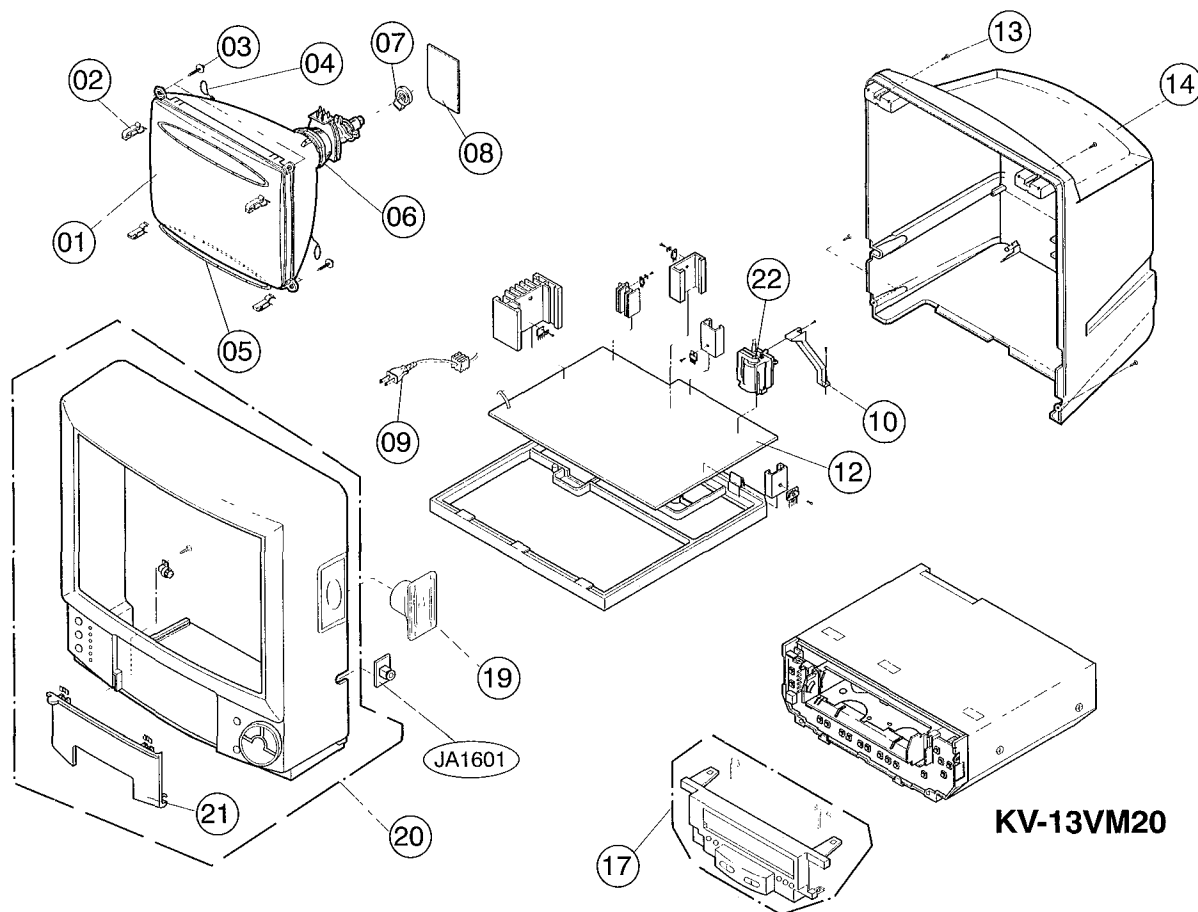
SECTION 14 EXPLODED VIEWS

PARTS LIST

14-1. TV

NOTE:

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.



| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------|-----------------------|--------------------------|--------|--------|-----------------------|---------------------------|--------|
| 01 | Δ 8-735-561-05 | CRT(14NDX)<MIZ> | | 12 | 9-907-990-01 | D MOUNT | |
| 02 | 9-908-964-01 | HOLDER, DEGAUSSING COIL | | 13 | 9-909-480-01 | SCREW, PAN HEAD TAP T4X16 | |
| 03 | 9-908-080-01 | SCREW ASSY, HEXAGON HEAD | | 14 | 9-907-940-01 | BACK COVER ASSY | |
| 04 | 9-907-961-01 | COATING EARTH ASSY | | 17 | 9-907-942-01 | VCR PANEL ASSY | |
| 05 | Δ 9-907-962-01 | COIL, DEGAUSSING | | 19 | 9-907-964-01 | SPEAKER CO71A03-447K14 | |
| 06 | 8-451-418-11 | DEFLECTION YOKE(Y14NDA2) | | 20 | 9-907-926-01 | CABINET ASSY | |
| 07 | 1-526-819-11 | SOCKET, CRT | | 21 | 9-907-927-01 | CONTROL DOOR ASSY | |
| 08 | 9-907-983-01 | C MOUNT | | 22 | Δ 9-907-991-01 | FBT | |
| 09 | 1-551-188-99 | CORD, POWER | | JA1601 | 1-507-939-11 | JACK, EAR PHONE | |
| 10 | 9-907-971-01 | HOLDER, FBT | | | | | |

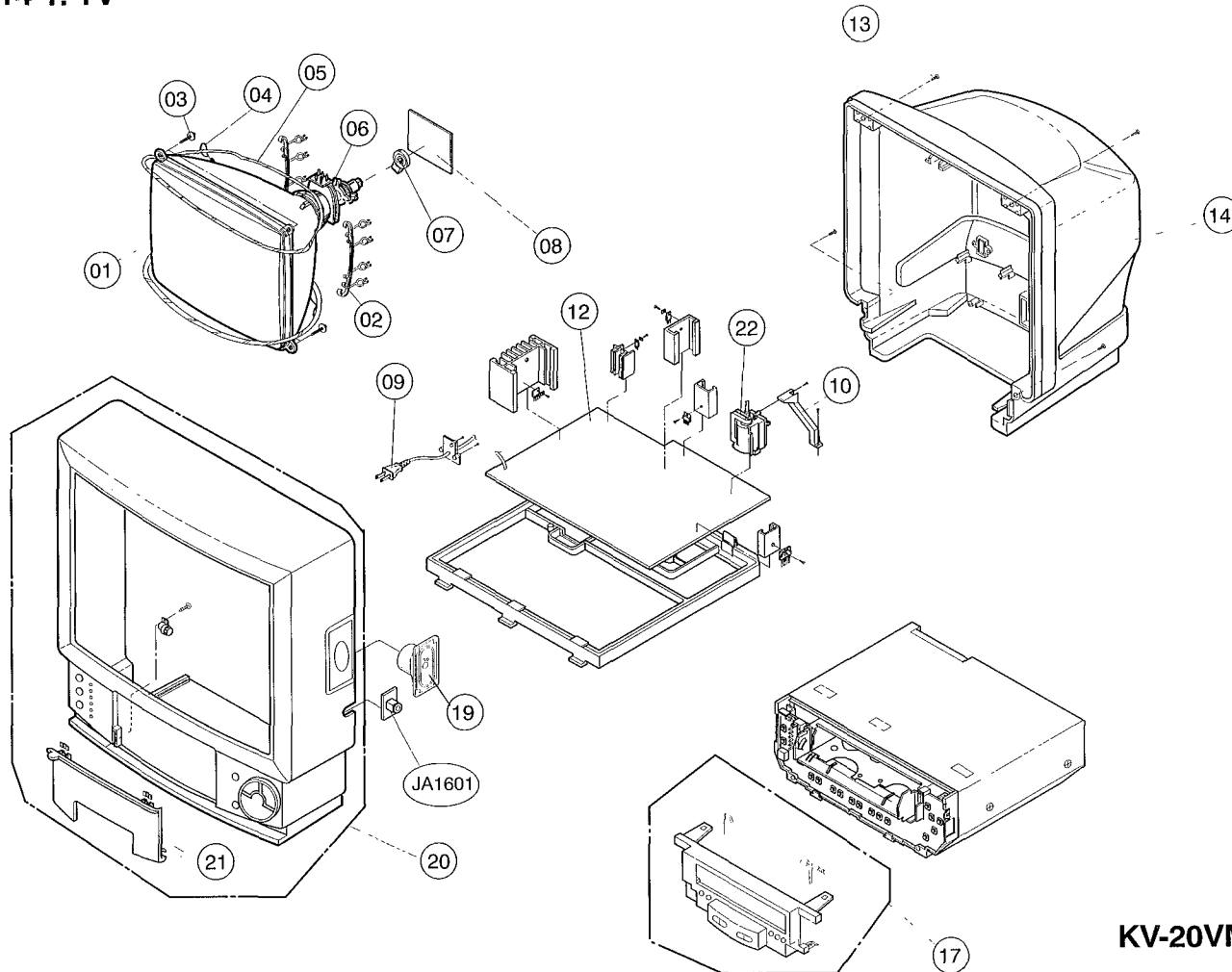
SECTION 14 EXPLODED VIEWS

NOTE:

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

PARTS LIST

14-1. TV



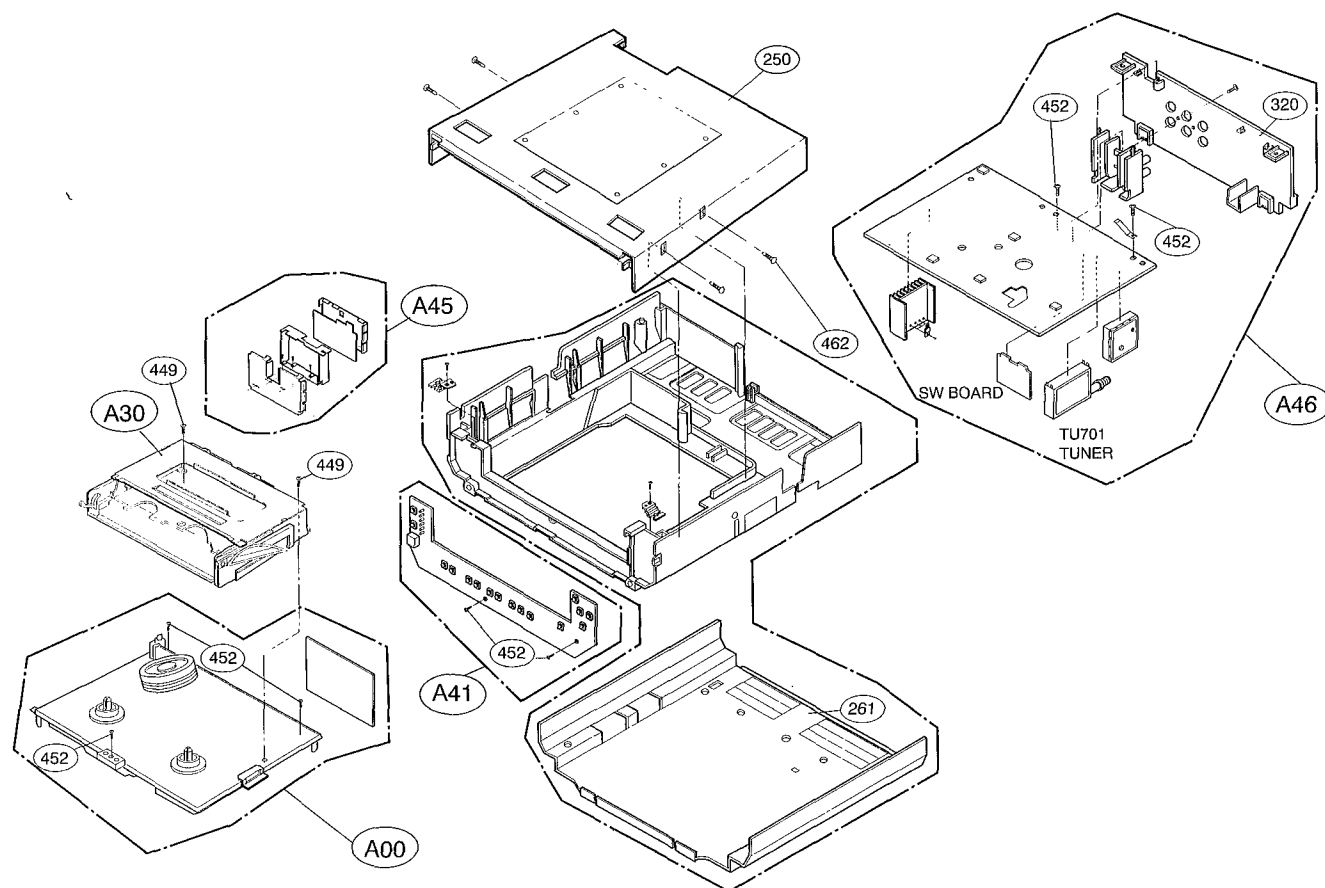
KV-20VM20

| REF NO | PART NO | DESCRIPTION | REMARK |
|-------------|--------------|--------------------------|--------|
| 01 Δ | 8-738-768-05 | CRT A51LDG50X | |
| 02 | 9-909-865-01 | HOLDER, DEGAUSSING COIL | |
| 03 | 9-909-864-01 | SCREW ASSY, HEXAGON HEAD | |
| 04 | 9-909-857-01 | COATING EARTH ASSY | |
| 05 Δ | 9-909-855-01 | COIL, DEGAUSSING | |
| 06 | 8-451-440-11 | DEFLECTION YOKE Y21NXA | |
| 07 | 9-909-869-01 | SOCKET, CRT | |
| 08 | 9-909-853-01 | C MOUNT | |
| 09 | 9-909-888-01 | CORD, POWER | |
| 10 | 9-907-971-01 | HOLDER, FBT | |

| REF NO | PART NO | DESCRIPTION | REMARK |
|-------------|--------------|---------------------------|--------|
| 12 | 9-909-852-01 | D MOUNT | |
| 13 | 9-909-881-01 | SCREW, PAN HEAD TAP T4X20 | |
| 14 | 9-909-860-01 | BACK COVER ASSY | |
| 17 | 9-907-942-01 | VCR PANEL ASSY | |
| 19 | 9-907-964-01 | SPEAKER C071A03-447K14 | |
| 20 | 9-909-859-01 | CABINET ASSY | |
| 21 | 9-909-863-01 | CONTROL DOOR ASSY | |
| 22 Δ | 9-909-890-01 | FBT | |
| JA1601 | 1-507-939-11 | JACK, EAR PHONE | |

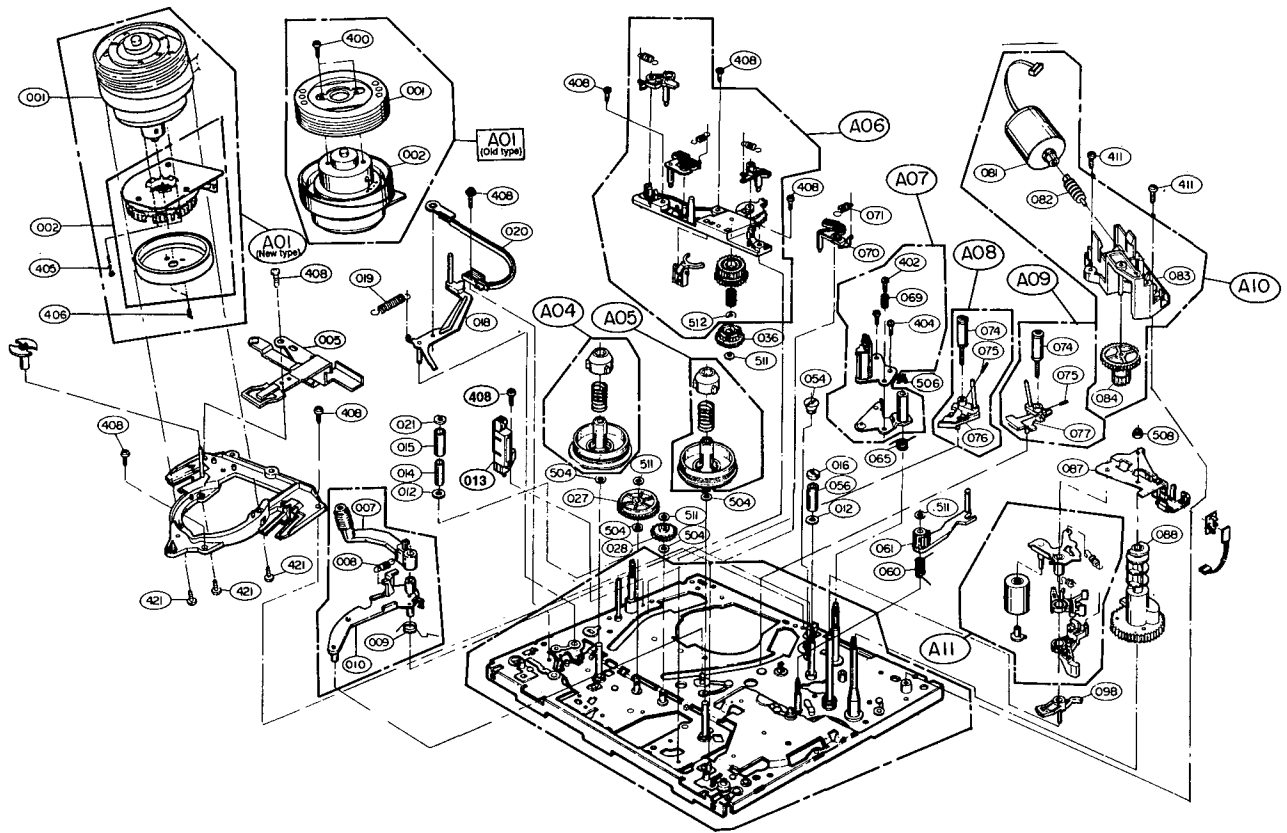
14-2. VIDEO

1. VCR Main Frame



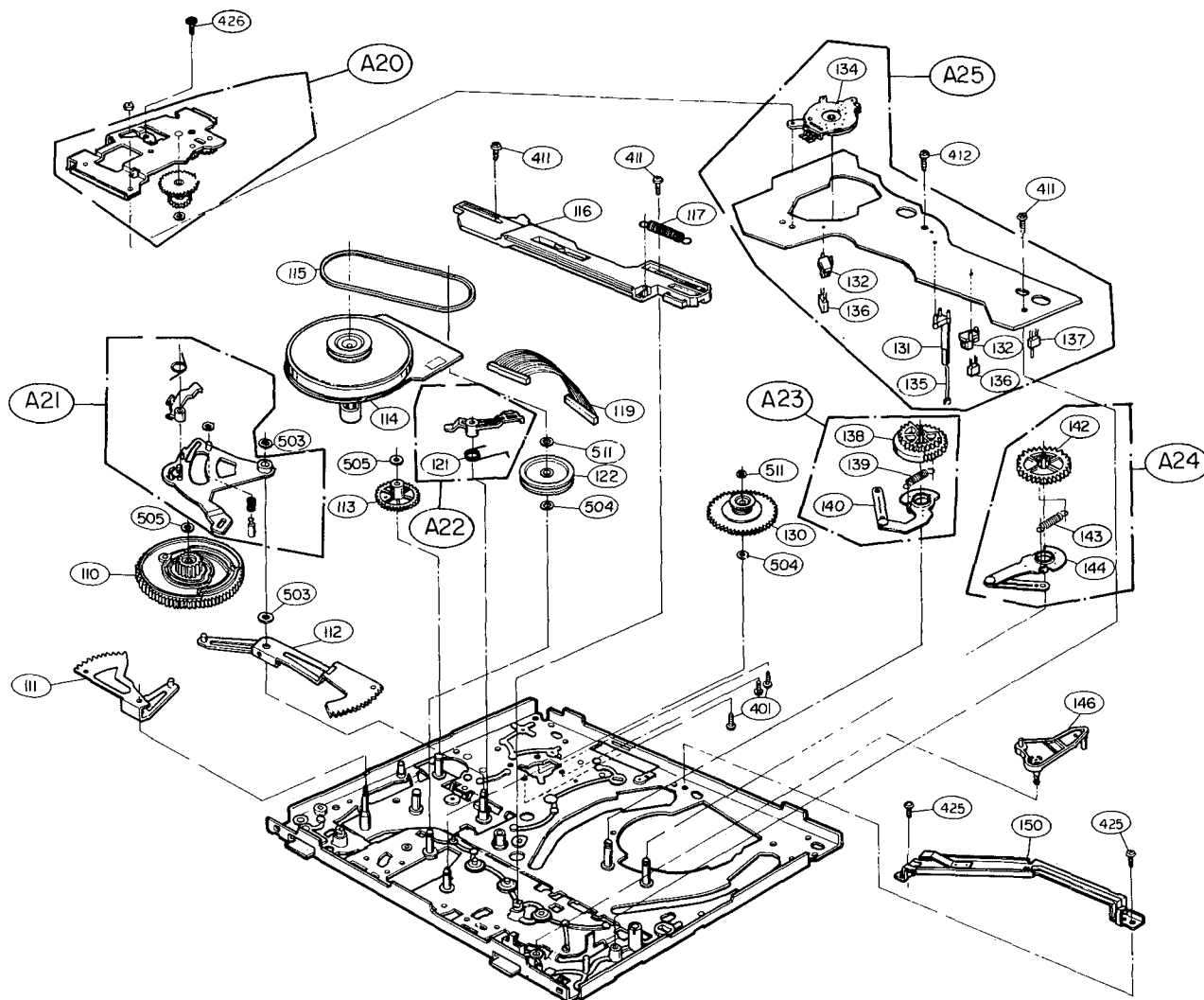
| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------|--------------|--------------------------------|--------|--------|--------------|-------------|--------|
| A00 | 9-908-172-01 | DECK ASSY D-17 P (2HD VCR PAL) | | A46 | 9-908-510-01 | MA BOARD | |
| A30 | 9-908-123-01 | HOUSING ASSY (D17) | | TU701 | 9-909-004-01 | TUNER | |
| 250 | 9-908-103-01 | CASE ASSY TOP | | | 9-909-874-01 | SW BOARD | |
| 261 | 9-908-112-01 | COVER BOTTOM | | | | | |
| 320 | 9-908-515-01 | PANEL ASSY DISTRIBUTOR | | | | | |
| 449 | 9-908-097-01 | SCREW SPECIAL | | | | | |
| 452 | 9-908-097-01 | SCREW SPECIAL | | | | | |
| 462 | 9-908-102-01 | SCREW SPECIAL (FBK) | | | | | |
| A41 | 9-908-670-01 | MF BOARD | | | | | |
| A45 | 9-908-656-01 | RP BOARD | | | | | |

2. Moving Mechanism Section(I)



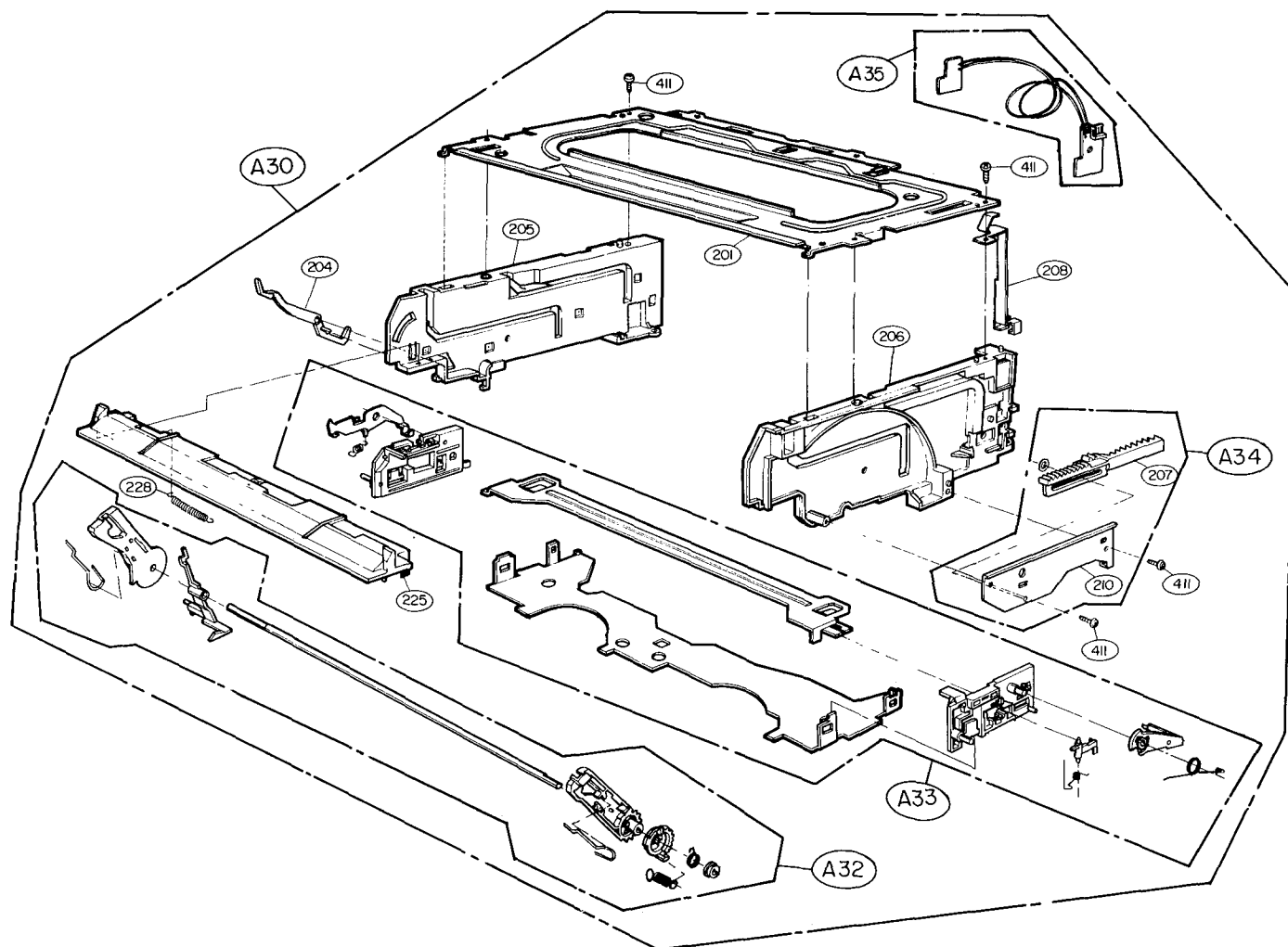
| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------|--------------|-----------------------------|--------|--------|--------------|-------------------------------|--------|
| A01 | 9-908-441-01 | DRUM ASSY GSA D-17 NTSC | | 060 | 9-908-369-01 | SPRING T/UP | |
| A04 | 9-908-362-01 | REEL ASSY S17 | | 061 | 9-908-293-01 | ARM ASSY T/UP | |
| A05 | 9-908-288-01 | REEL ASSY T17 | | 065 | 9-908-356-01 | SPRING A/C | |
| A06 | 9-908-243-01 | BRACKET ASSY F/R | | 069 | 9-908-241-01 | SPRING AZIMUTH | |
| A07 | 9-908-228-01 | BASE ASSY A/C | | 070 | 9-908-338-01 | BRACK ASSY T-MAIN | |
| A08 | 9-908-202-01 | BASE ASSY,P2 | | 071 | 9-908-380-01 | SPRING TMB | |
| A09 | 9-908-196-01 | BASE ASSY,P3 | | 074 | 9-908-198-01 | ROLLER ASSY, GUIDE | |
| A10 | 9-908-216-01 | MOTOR ASSY LOAD | | 075 | 9-908-199-01 | SCREW MINIATURE | |
| A11 | 9-908-313-01 | LEVER ASSY PINCH | | 076 | 9-908-203-01 | BASE SUB ASSY, SLALT (L, W-W) | |
| 001 | 9-908-485-01 | DRUM ASSY, UPPER (NTSC-2CH) | | 077 | 9-908-197-01 | BASE SUB ASSY, SLALT (R, W-W) | |
| 002 | 9-908-442-01 | DRUM ASSY, LOWER (D17-2CH) | | 081 | 9-908-224-01 | MOTOR SUB ASSY, L | |
| 005 | 9-908-341-01 | BASE ASSY D-BRUSH | | 082 | 9-908-221-01 | WORM ASSY | |
| 007 | 9-908-388-01 | ARM SUB ASSY, CU | | 083 | 9-908-217-01 | BRACKET SUB ASSY L/M | |
| 008 | 9-908-395-01 | SPRING CU | | 084 | 9-908-220-01 | WHEEL WORM | |
| 009 | 9-908-394-01 | SPRING CL | | 087 | 9-908-375-01 | BRACKET ASSY DEW | |
| 010 | 9-908-387-01 | ARM CL | | 088 | 9-908-374-01 | GEAR PINCH (N) | |
| 012 | 9-908-344-01 | GUIDE 17 | | 098 | 9-908-370-01 | LEVER T-UP (N) | |
| 013 | 9-908-343-01 | HEAD FE, HVFHF0010AK | | 400 | 9-908-503-01 | PAN HEAD MACHINE | |
| 014 | 9-908-345-01 | SLEEVE P1 | | 402 | 9-908-238-01 | SCREW SPECIAL | |
| 015 | 9-908-346-01 | ROLLER P1 | | 404 | 9-908-239-01 | SCREW CONE POINT 3X10 | |
| 016 | 9-908-382-01 | ADJUST P(4) | | 408 | 9-908-171-01 | BINDING HEAD MA | |
| 018 | 9-908-206-01 | ARM ASSY TENSION | | 411 | 9-908-163-01 | SCREW SPECIAL (3X12) | |
| 019 | 9-908-355-01 | SPRING TENSION | | 412 | 9-908-422-01 | BINDING HEAD MA | |
| 020 | 9-908-211-01 | BAND ASSY TENSION | | 421 | 9-908-413-01 | PAN HEAD MACHINE | |
| 021 | 9-908-348-01 | STOPPER P1 | | 504 | 9-908-434-01 | WASHER PS DE | |
| 027 | 9-908-360-01 | GEAR IDLE (A) POM 3G | | 506 | 9-908-342-01 | NUT NYLON M3 | |
| 028 | 9-908-361-01 | GEAR IDLE (B) POM 3G | | 508 | 9-908-998-01 | NUT NYLON(M3) | |
| 036 | 9-908-358-01 | GEAR F/R | | 511 | 9-908-427-01 | WASHER STOPPER | |
| 054 | 9-908-357-01 | ADJUST X-ASSY | | 512 | 9-908-434-01 | WASHER STOPPER | |
| 056 | 9-908-353-01 | SLEEVE P4 | | | | | |

3. Moving Mechanism Section(II)



| REFNO | PART NO | DESCRIPTION | REMARK | REFNO | PART NO | DESCRIPTION | REMARK |
|-------|--------------|----------------------------|--------|-------|--------------|-----------------------------|--------|
| A20 | 9-908-325-01 | BRACKET ASSY BOTTOM | | 136 | 9-908-297-01 | SENSOR SG-105(REEL) D-16KOC | |
| A21 | 9-908-281-01 | LEVER ASSY RAT | | 137 | 9-908-304-01 | SWITCH ESE-105SV1 | |
| A22 | 9-908-276-01 | BRAKE ASSY CAP | | 138 | 9-908-180-01 | GEAR LOAD(R) | |
| A23 | 9-908-179-01 | ARM ASSY LOAD(R) | | 139 | 9-908-181-01 | SPRING LOADING | |
| A24 | 9-908-187-01 | ARM ASSY LOAD(L) | | 140 | 9-908-182-01 | ARM SUB ASSY | |
| A25 | 9-908-294-01 | PWB ASSY D-17,VCR | | 142 | 9-908-188-01 | GEAR LOAD(L) | |
| 110 | 9-908-381-01 | CAM D17 | | 143 | 9-908-189-01 | SPRING LOADING | |
| 111 | 9-908-337-01 | GEAR ASSY RACK F/L | | 144 | 9-908-190-01 | ARM SUB ASSY (L) | |
| 112 | 9-908-336-01 | GEAR ASSY RACK T | | 146 | 9-908-383-01 | LEVER ASSY A-TEN | |
| 113 | 9-908-379-01 | GEAR PC | | 150 | 9-908-397-01 | BRACKET ASSY C-GUIDE | |
| 114 | 9-908-352-01 | MOTOR CAPSTAN GVC-017P | | 400 | 9-908-503-01 | PAN HEAD MACHINE | |
| 115 | 9-908-354-01 | BELT CENTER | | 401 | 9-908-245-01 | PAN HEAD MACHINE | |
| 116 | 9-908-367-01 | PLATE F17 | | 411 | 9-908-163-01 | SCREW SPECIAL (3X12) | |
| 117 | 9-908-368-01 | SPRING FP | | 412 | 9-908-422-01 | BINDING HEAD MA | |
| 121 | 9-908-280-01 | SPRING CAPSTAN | | 425 | 9-908-419-01 | BRAIZER HD TAP | |
| 122 | 9-908-359-01 | PULLEY GEAR POM 3G | | 426 | 9-908-420-01 | PAN HEAD MACHINE | |
| 130 | 9-908-269-01 | CLUTCH ASSY POM 7G FELT | | 503 | 9-908-426-01 | WASHER STOPPER | |
| 131 | 9-908-299-01 | HOLDER LED(Q) | | 504 | 9-908-434-01 | WASHER PS D3 | |
| 132 | 9-908-298-01 | HOLDER | | 505 | 9-908-434-01 | WASHER STOPPER | |
| 134 | 9-908-300-01 | SWITCH MODE | | 511 | 9-908-427-01 | WASHER STOPPER | |
| 135 | 9-908-302-01 | DIODE LED IR SENSOR EL-55L | | 512 | 9-908-434-01 | WASHER STOPPER | |

4. Front Loading Mechanism Section



| REFNO | PART NO | DESCRIPTION | REMARK | REFNO | PART NO | DESCRIPTION | REMARK |
|-------|--------------|----------------------|--------|-------|--------------|----------------------|--------|
| A30 | 9-908-123-01 | HOUSING ASSY | | 205 | 9-908-124-01 | BRACKET LEFT (D17) | |
| A32 | 9-908-142-01 | GEAR ASSY DRIVE | | 206 | 9-908-125-01 | BRACKET RIGHT (D17) | |
| A33 | 9-908-130-01 | BRACKET ASSY CARRIER | | 207 | 9-908-167-01 | GEAR RACK N/D | |
| A34 | 9-908-164-01 | BRACKET ASSY SIDE | | 208 | 9-908-126-01 | PLATE GND TOP | |
| A35 | 9-909-882-01 | PWB ASSY SENSOR | | 210 | 9-908-165-01 | BRACKET SIDE | |
| 201 | 9-908-129-01 | PLATE TOP | | 225 | 9-908-127-01 | GUIDE CST | |
| 204 | 9-908-153-01 | OPENER DOOR | | 228 | 9-908-128-01 | SPRING S/W | |
| | | | | 411 | 9-908-163-01 | SCREW SPECIAL (3X12) | |

| REF NO | PART NO | DESCRIPTION | REMARK |
|----------------------|----------------|---|--------|
| C1609 | 1-137-401-11 | CAP,PETP FILM 0 22MF 50V | |
| C1610 | 1-126-941-11 | CAP,ELECT 470MF 16V | |
| C1615 | 9-908-968-01 | CAP,ELECT 0 1U 50V | |
| C1616 | 1-137-417-11 | CAP,PETP FILM 0 015MF 100V (KV-13VM20 only) | |
| C1616 | 1-137-418-11 | CAP,PETP 0 022MF 10V (KV-20VM20 only) | |
| C1701 | 1-124-347-00 | CAP,ELECT 100MF 160V (KV-13VM20 only) | |
| C1701 | 1-124-356-11 | CAP,ELECT 220MF 160V (KV-20VM20 only) | |
| C1800 | 1-136-345-11 | CAPACITOR AC 0 1MF 125V | |
| C1801 | 1-136-345-11 | CAPACITOR AC 0 1MF 125V | |
| C1802 | 1-104-331-11 | CAP,CERAMIC 2200PF 2KV | |
| C1803 | 1-104-331-11 | CAP,CERAMIC 2200PF 2KV | |
| C1804 | 1-104-331-11 | CAP,CERAMIC 2200PF 2KV | |
| C1805 | 1-104-331-11 | CAP,CERAMIC 2200PF 2KV | |
| C1806 | 1-125-499-11 | CAPACITOR 220MF 400V | |
| C1807 | 1-136-539-11 | CAP,PETP FILM 2200MF 800V | |
| C1808 | 1-164-645-11 | CAP,CERAMIC 1000PF 500V | |
| C1809 | 1-124-667-11 | CAP,ELECT 10MF 100V | |
| C1810 | 1-128-576-11 | CAP,ELECT 100MF 16V | |
| C1811 | 1-126-969-11 | CAP,ELECT 220MF 16V | |
| C1812 | 1-165-127-11 | CAP,CERAMIC 470PF 500V | |
| C1813 | 1-164-646-11 | CAP,CERAMIC 2200PF 500V | |
| C1814 | 1-124-667-11 | CAP,ELECT 10MF 100V | |
| C1815 | 1-126-356-11 | CAP,ELECT 220MF 160V | |
| C1816 | 9-908-969-01 | CAP,ELECT 100MF 100V | |
| C1817 | 9-908-970-01 | CAP,CERAMIC 1200PF 500V | |
| C1818 | 1-124-618-11 | CAP,ELECT 2200MF 35V | |
| C1819 | 1-124-557-11 | CAP,ELECT 1000MF 25V | |
| C1820 | 1-165-127-11 | CAP,CERAMIC 470PF 500V | |
| C1821 | 1-165-127-11 | CAP,CERAMIC 470PF 500V | |
| C1822 | 1-126-951-11 | CAP,ELECT 470MF 35V | |
| C1823 | 1-124-618-11 | CAP,ELECT 2200MF 35V | |
| C1824 | 1-126-964-11 | CAP,ELECT 10MF 50V | |
| C1825 | △ 9-908-971-01 | CAPACITOR DE 4700PF | |
| C1826 | 1-137-399-11 | CAP,PETP FILM 0 1MF 100V | |
| C1827 | 1-137-416-11 | CAP,PETP FILM 0 01MF 100V | |
| C1828 | 1-137-416-11 | CAP,PETP FILM 0 01MF 100V | |
| C1829 | 1-137-401-11 | CAP,PETP FILM 0 22MF 50V (KV-13VM20 only) | |
| C1829 | 1-137-144-11 | CAP,PETP FILM 0 47MF 50V (KV-20VM20 only) | |
| C1830 | △ 9-908-971-01 | CAPACITOR DE 4700PF | |
| C1831 | 1-126-964-11 | CAP,ELECT 10MF 16V (KV-13VM20 only) | |
| C1831 | 1-124-925-11 | CAP,ELECT 2 2MF 50V (KV-20VM20 only) | |
| C1832 | 9-909-477-01 | CAPACITOR 4700PF 1K | |
| C1904 | 1-136-203-11 | CAP,PETP FILM 0 01MF 630V (KV-13VM20 only) | |
| C1904 | 9-909-475-01 | CAP,CERAMIC 2200PF 2KV (KV-20VM20 only) | |
| D1201 | 9-908-974-01 | CAP,CERAMIC 560PF 50V | |
| <DIODE> | | | |
| D1202 | 8-719-300-80 | DIODE RU-1C (KV-13VM20 only) | |
| D1202 | 8-719-300-33 | DIODE RU-3AM (KV-20VM20 only) | |
| D1203 | 8-719-815-85 | DIODE S6539 | |
| D1205 | 8-719-815-85 | DIODE S6539 | |
| D1206 | 9-908-037-01 | DIODE BAT 41 | |
| D1301 | 8-719-300-80 | DIODE RU-1C | |
| D1302 | 8-719-300-33 | DIODE RU-3AM | |
| D1305 | 8-719-815-85 | DIODE S6539 | |
| D1306 | 8-719-815-85 | DIODE S6539 | |
| D1403 | △ 8-719-300-80 | DIODE RU-1C | |
| D1405 | 8-719-300-80 | DIODE RU-1C | |
| D1415 | 8-719-018-66 | DIODE ES1F (KV-13VM20 only) | |
| D1508 | 8-719-815-85 | DIODE S6539 | |
| D1802 | 8-719-304-63 | DIODE RM11C | |
| D1803 | 8-719-300-33 | DIODE RU-3AM | |
| D1804 | 8-719-300-33 | DIODE RU-3AM | |
| D1805 | 3-719-300-33 | DIODE RU-3AM | |
| D1806 | 8-719-300-33 | DIODE RU-3AM | |
| D1807 | 8-719-300-70 | DIODE RH-1C | |
| D1809 | 8-719-300-33 | DIODE RU-3AM | |
| D1810 | 8-719-961-04 | DIODE RGP10J | |
| D1811 | 9-908-006-01 | DIODE FML-G12S | |
| D1812 | 8-719-961-04 | DIODE RGP10J | |
| D1813 | 9-908-006-01 | DIODE FML-G12S | |
| D1814 | 8-719-961-04 | DIODE RGP10J | |
| D1816 | 8-719-300-33 | DIODE RU-3AM | |
| D1817 | 8-719-300-33 | DIODE RU-3AM | |
| D1819 | 8-719-815-85 | DIODE S6539 | |
| D1821 | 8-719-815-85 | DIODE S6539 | |
| D1824 | 8-719-304-63 | DIODE RM11CV | |

| REF NO | PART NO | DESCRIPTION | REMARK |
|-----------------------------|----------------|---------------------------------------|--------|
| D1825 | 8-719-304-63 | DIODE RM11CV | |
| D1826 | 8-719-304-63 | DIODE RM11C | |
| D1827 | 8-719-815-85 | DIODE S6539 (KV-13VM20 only) | |
| D1828 | 8-719-300-33 | DIODE RU-3AM | |
| D1303 | 8-719-982-20 | DIODE MTZ30B | |
| ZD1304 | 8-719-982-20 | DIODE MTZ30B | |
| ZD1401 | 8-179-921-49 | DIODE MTZ6 2B | |
| ZD1402 | 8-719-921-49 | DIODE MTZ6 2B | |
| ZD1403 | 8-719-921-63 | DIODE MTZ7.5B | |
| ZD1404 | △ 8-719-921-49 | DIODE MTZ6.2B | |
| ZD1501 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1502 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1503 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1504 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1505 | 8-719-921-69 | DIODE MTZ9 1B | |
| ZD1506 | 8-719-921-82 | DIODE Z12BM | |
| ZD1507 | 8-719-982-03 | DIODE MTZ3 6B (KV-13VM20 only) | |
| ZD1507 | 9-909-900-01 | DIODE MTZ5 1B (KV-20VM20 only) | |
| ZD1601 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1808 | 8-719-109-97 | DIODE MTZ6 8B | |
| ZD1815 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1818 | 8-719-921-49 | DIODE MTZ6 2B | |
| ZD1820 | 8-719-921-80 | DIODE MTZ11B | |
| ZD1821 | 8-719-982-03 | DIODE MTZ3 6B | |
| ZD1822 | 1-809-605-011 | DIODE MTZ13B (KV-13VM20 only) | |
| ZD1822 | 9-933-002-01 | DIODE MTZ15B (KV-20VM20 only) | |
| <FILTER> | | | |
| DL1201 | 9-909-887-01 | COMB FILTER (KV-20VM20 only) | |
| <DELAY LINE> | | | |
| DL1202 | 9-908-973-01 | DELAY LINE (KV-13VM20 only) | |
| <FERRITE BEAD> | | | |
| FB1402 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| FB1403 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| FB1801 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| FB1802 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| FB1803 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| FB1804 | 1-408-105-00 | MICRO INDUCTOR 1UH | |
| <FUSE> | | | |
| F1801 | △ 1-532-703-00 | FUSE 12V/4A | |
| F1802 | △ 9-908-975-01 | FUSE | |
| F1803 | △ 9-908-975-01 | FUSE | |
| <IC> | | | |
| IC1301 | 9-908-018-01 | IC,LA7833 | |
| IC1501 | 9-908-059-01 | IC,AN5302 | |
| IC1601 | 8-759-420-04 | IC,AN5265 | |
| IC1801 | 9-908-014-01 | IC,STR-S6707 | |
| IC1802 | △ 8-719-902-56 | IC,PHOTOCOUPLER | |
| IC1803 | △ 8-719-902-56 | IC,PHOTOCOUPLER | |
| IC1804 | △ 8-749-921-89 | IC,SE115N | |
| IC1805 | 8-759-518-68 | IC,PQ12RF21 | |
| <JACK> | | | |
| JA1601 | 1-507-939-11 | JACK EARPHONE | |
| <COIL> | | | |
| J38 | 1-410-521-11 | MICRO INDUCTOR 100UH (KV-13VM20 only) | |
| L1201 | 1-410-521-11 | MICRO INDUCTOR 100UH | |
| L1401 | △ 1-410-521-11 | MICRO INDUCTOR 100UH | |
| L1402 | 9-908-976-01 | COIL | |
| L1403 | 9-907-996-01 | COIL | |
| L1404 | 1-410-514-11 | MICRO INDUCTOR 27UH | |
| L1405 | 1-410-521-11 | MICRO INDUCTOR 100UH | |
| L1406 | △ 1-410-521-11 | MICRO INDUCTOR 100UH | |
| L1501 | 1-410-516-11 | MICRO INDUCTOR 39UH | |
| L1560 | 9-908-977-01 | MICRO INDUCTOR 47UH | |
| L1701 | 9-907-998-01 | COIL H-CHOKE | |

| REF NO. | PART NO | DESCRIPTION | REMARK |
|---------|--------------|-------------|--------|
| L1801 | 9-908-978-01 | COIL | |
| L1802 | 9-908-979-01 | COIL | |

<PINS & CONNECTOR>

| | | | |
|--------|----------------|--|--|
| P1401 | △ 9-909-479-01 | PIN 6P (CMI1506-0301) | |
| P1501 | 9-908-977-01 | CONNECTOR ASSY,9P (L=300) | |
| P1501A | 9-907-993-01 | PIN WAFER IL-G 9(2.5S) | |
| P1502 | 9-907-994-01 | PIN MOLEX 5289-2A (7.5-5 LOCK) | |
| P1502 | 9-908-996-01 | CONNECTOR ASSY 3P MOLEX,250MM | |
| P1502A | 9-907-994-01 | PIN MOLEX 5289-2A (7.5-5 LOCK) | |
| P1503 | 9-908-997-01 | CONNECTOR ASSY,GIL-J,8P | |
| P1504 | 9-908-000-01 | CONNECTOR ASSY,GIL-J,10P | |
| P1601 | 9-908-057-01 | PIN WAFER IL-G 2(2.5S)STICK | |
| P1602 | 9-908-003-01 | CONNECTOR ASSY 5P (150MM) GIL-J | |
| P1603 | 9-908-004-01 | CONNECTOR ASSY ASSY,SP SHIELD WIRE (L=450) | |
| P1604 | 9-908-058-01 | PIN WAFER IL-G 3(2.5S)STICK | |
| P1801 | 9-908-987-01 | PIN 1P CONNECTOR | |
| P1802 | 9-908-985-01 | PIN 2P | |
| P1803 | 9-908-002-01 | CONNECTOR ASSY 6P (150MM) GIL-J | |
| P1804 | 9-908-987-01 | PIN 1P CONNECTOR | |

<TRANSISTOR>

| | | | |
|-------|--------------|--|--|
| Q1201 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1202 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1203 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1204 | 8-729-201-53 | TRANSISTOR 2SA1015-GR | |
| Q1206 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1252 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1401 | 8-729-232-26 | TRANSISTOR 2SC2668-OY (KV-13VM20 only) | |
| Q1401 | 8-729-266-82 | TRANSISTOR 2SC2668 (KV-20VM20 only) | |
| Q1402 | 8-729-206-04 | TRANSISTOR 2SD1554-LB (KV-13VM20 only) | |
| Q1402 | 8-729-821-87 | TRANSISTOR 2SD1878 (KV-20VM20 only) | |
| Q1501 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1502 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1503 | 8-729-201-53 | TRANSISTOR 2SA1015-GR | |
| Q1504 | 8-729-140-96 | TRANSISTOR 2SD774-34 | |
| Q1505 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1601 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1801 | 8-729-301-42 | TRANSISTOR 2SD1135-C | |
| Q1802 | 8-729-206-81 | TRANSISTOR 2SA9638B-0 | |
| Q1803 | 8-719-803-82 | TRANSISTOR 2SC3468-E | |
| Q1804 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1805 | 8-719-803-82 | TRANSISTOR 2SC3468-E | |
| Q1806 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1807 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1808 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1809 | 8-729-201-53 | TRANSISTOR 2SC1015-GR | |
| Q1810 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1811 | 8-729-140-96 | TRANSISTOR 2SD774-34 | |
| Q1812 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1813 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q1814 | 8-729-803-76 | TRANSISTOR 2SA1371-E | |
| Q1815 | 8-719-803-82 | TRANSISTOR 2SC3468-E | |

<RELAY>

| | | | |
|--------|----------------|-------|--|
| RL1801 | △ 9-908-980-01 | RELAY | |
| RL1802 | △ 9-908-980-01 | RELAY | |

<THERMISTOR>

| | | | |
|--------|----------------|--------------------------------------|--|
| TH1801 | △ 1-809-539-11 | THERMISTOR POSITIVE (KV-13VM20 only) | |
| TH1801 | △ 9-909-889-01 | THERMISTOR POSITIVE (KV-20VM20 only) | |
| TH1802 | △ 9-908-008-01 | THERMISTOR POSITIVE | |

<TRANSFORMER>

| | | | |
|-------|----------------|---|--|
| T1401 | △ 9-908-993-01 | TRANSFORMER HORIZONTAL DRIVING | |
| T1402 | △ 9-907-991-01 | FBT (KV-13VM20 only) | |
| T1402 | △ 9-909-890-01 | FBT (KV-20VM20 only) | |
| T1801 | △ 9-908-011-01 | TRANSFORMER SMPS(STR-S6707, SONY)(KV-13VM20 only) | |
| T1801 | △ 9-909-901-01 | TRANSFORMER SMPS(STR-S6707, SONY)(KV-20VM20 only) | |

| REF NO | PART NO | DESCRIPTION | REMARK |
|------------|----------------|---|--------|
| <RESISTOR> | | | |
| FR1241 | 1-217-418-00 | RES,FUSE 0.47 1/2W | |
| FR1242 | 1-260-052-11 | RES,FUSE 3.3 1/2W (KV-13VM20 only) | |
| FR1242 | 1-247-688-11 | RES,FUSE 10 1/2W (KV-20VM20 only) | |
| FR1315 | 1-217-418-00 | RES,FUSE 0.47 1/2W | |
| FR1417 | △ 1-212-934-00 | RES,FUSE 1.0 1/2W | |
| FR1422 | 1-217-198-01 | RES,FUSE 0.68 2W (KV-13VM20 only) | |
| FR1422 | 9-909-899-01 | RES,FUSE 1.6 2W (KV-20VM20 only) | |
| FR1423 | △ 1-217-418-00 | RES,FUSE 0.47 1/2W | |
| FR1428 | 1-260-100-11 | RES,FUSE 1.2K 1/2W (KV-13VM20 only) | |
| FR1429 | 1-260-100-11 | RES,FUSE 1.2K 1/2W (KV-13VM20 only) | |
| FR1518 | 1-260-084-11 | RES,FUSE 56 1/2W | |
| FR1611 | 1-211-771-11 | RES,FUSE 4.7 1/2W | |
| FR1805 | 1-217-198-01 | RES,FUSE 0.68 2W | |
| FR1806 | 1-260-100-11 | RES,FUSE 1.2K 1/2W | |
| FR1810 | 1-259-853-11 | RES,FUSE 100 1W | |
| FR1827 | 1-217-198-01 | RES,FUSE 0.68 2W | |
| FR1829 | 1-249-478-11 | RES,FUSE 2.2 1/2W | |
| FR1838 | 1-217-469-00 | RES,FUSE 1.1W (KV-13VM20 only) | |
| FR1838 | 1-216-347-11 | RES,FUSE 0.68 1W (KV-20VM20 only) | |
| R1201 | 1-249-426-11 | RES,CARBON(SMALL) 5.6K | |
| R1202 | 1-249-431-11 | RES,CARBON(SMALL) 15K | |
| R1203 | 1-249-836-11 | RES,CARBON(SMALL) 1.6K (KV-13VM20 only) | |
| R1204 | 1-249-836-11 | RES,CARBON(SMALL) 1.6K (KV-13VM20 only) | |
| R1205 | 1-249-417-11 | RES,CARBON(SMALL) 1.0K | |
| R1206 | 1-249-433-11 | RES,CARBON(SMALL) 20K | |
| R1208 | 1-247-838-00 | RES,CARBON(SMALL) 2.0K | |
| R1212 | 1-247-818-11 | RES,CARBON(SMALL) 300 (KV-13VM20 only) | |
| R1212 | 9-909-870-01 | RES,CARBON(SMALL) 750 (KV-20VM20 only) | |
| R1213 | 1-249-411-11 | RES,CARBON(SMALL) 330 | |
| R1215 | 1-260-124-11 | RES,CARBON(SMALL) 120K (KV-13VM20 only) | |
| R1215 | 9-933-000-01 | RES,CARBON(SMALL) 91K 1/2W (KV-20VM20 only) | |
| R1216 | 1-249-427-11 | RES,CARBON(SMALL) 6.8K | |
| R1217 | 1-249-433-11 | RES,CARBON(SMALL) 20K | |
| R1218 | 1-247-883-00 | RES,CARBON(SMALL) 150K | |
| R1219 | 1-247-866-11 | RES,CARBON(SMALL) 30K (KV-13VM20 only) | |
| R1219 | 1-247-864-11 | RES,CARBON(SMALL) 24K (KV-20VM20 only) | |
| R1220 | 1-249-439-11 | RES,CARBON(SMALL) 68K (KV-13VM20 only) | |
| R1220 | 1-249-438-11 | RES,CARBON(SMALL) 56K (KV-20VM20 only) | |
| R1221 | 1-249-434-11 | RES,CARBON(SMALL) 27K | |
| R1222 | 1-249-433-11 | RES,CARBON(SMALL) 22K | |
| R1223 | 1-249-431-11 | RES,CARBON(SMALL) 15K | |
| R1225 | 1-247-838-00 | RES,CARBON(SMALL) 2.0K | |
| R1226 | 1-247-881-00 | RES,CARBON(SMALL) 120K | |
| R1227 | 1-249-436-11 | RES,CARBON(SMALL) 39K (KV-13VM20 only) | |
| R1227 | 1-259-454-11 | RES,CARBON(SMALL) 12K (KV-20VM20 only) | |
| R1228 | 1-249-433-11 | RES,CARBON(SMALL) 20K (KV-13VM20 only) | |
| R1228 | 1-249-432-11 | RES,CARBON(SMALL) 18K (KV-20VM20 only) | |
| R1229 | 1-249-426-11 | RES,CARBON(SMALL) 5.6K | |
| R1230 | 1-247-868-11 | RES,CARBON(SMALL) 36K | |
| R1231 | 1-247-860-11 | RES,CARBON(SMALL) 16K | |
| R1233 | 1-259-491-11 | RES,CARBON(SMALL) 430K | |
| R1234 | 1-249-411-11 | RES,CARBON(SMALL) 330 | |
| R1235 | 1-249-435-11 | RES,CARBON(SMALL) 33K | |
| R1236 | 1-249-423-11 | RES,CARBON(SMALL) 3.3K | |
| R1237 | 1-249-423-11 | RES,CARBON(SMALL) 3.3K | |
| R1238 | 1-249-423-11 | RES,CARBON(SMALL) 3.3K | |
| R1239 | 1-249-423-11 | RES,CARBON(SMALL) 3.3K (KV-13VM20 only) | |
| R1239 | 1-247-834-11 | RES,CARBON(SMALL) 1.3K (KV-20VM20 only) | |
| R1240 | 9-908-983-01 | RES,CARBON(SMALL) 2.7M | |
| R1251 | 1-249-434-11 | RES,CARBON(SMALL) 27K | |
| R1252 | 1-249-427-11 | RES,CARBON(SMALL) 6.8K (KV-20VM20 only) | |
| R1253 | 1-249-433-11 | RES,CARBON(SMALL) 22K | |
| R1301 | 1-249-410-11 | RES,CARBON(SMALL) 270 | |
| R1302 | 1-249-411-11 | RES,CARBON(SMALL) 330 | |
| R1303 | 1-249-438-11 | RES,CARBON(SMALL) 56K | |
| R1304 | 1-247-895-00 | RES,CARBON(SMALL) 470K | |
| R1305 | 1-216-429-11 | RES,METAL OXIDE FILM 270 1W | |
| R1306 | 1-249-436-11 | RES,CARBON(SMALL) 39K (KV-13VM20 only) | |
| R1306 | 1-249-434-11 | RES,CARBON(SMALL) 27K (KV-20VM20 only) | |
| R1307 | 1-259-461-11 | RES,CARBON(SMALL) 24K | |
| R1308 | 1-259-451-11 | RES,CARBON(SMALL) 9.1K (KV-13VM20 only) | |
| R1308 | 1-247-852-11 | RES,CARBON(SMALL) 7.5K (KV-20VM20 only) | |
| R1309 | 1-249-399-11 | RES,CARBON(SMALL) 33 | |
| R1310 | 1-249-484-11 | RES,CARBON(SMALL) 6.8 | |
| R1311 | 1-249-484-11 | RES,CARBON(SMALL) 6.8 | |
| R1312 | 1-249-405-11 | RES,CARBON(SMALL) 100 | |
| R1313 | 1-247-833-11 | RES,CARBON(SMALL) 1.2K | |

| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------|--------------|---|--------|--------|--------------|--|--------|
| R1314 | 1-260-099-11 | RES,CARBON(SMALL) 1 0K | | R1807 | 1-215-882-00 | RES,METAL OXIDE FILM 22 2W | |
| R1316 | 1-249-424-11 | RES,CARBON(SMALL) 3 9K | | R1808 | 9-908-989-01 | RESISTOR 0 22 2W | |
| R1401 | 1-247-842-11 | RES,CARBON(SMALL) 3 0K | | R1811 | 1-249-421-11 | RES,CARBON 2 2K 1/4W (KV-20VM20 only) | |
| R1402 | 1-247-816-11 | RES,CARBON(SMALL) 240 | | | | | |
| R1403 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R1812 | 1-216-354-11 | RES,METAL OXIDE FILM 2 70 1W | |
| | | | | R1813 | 1-215-927-00 | RES,METAL OXIDE FILM 47K 3W | |
| R1404 | 1-249-420-11 | RES,CARBON(SMALL) 1 8K (KV-13VM20 only) | | R1814 | 1-260-099-11 | RES,CARBON(SMALL) 1 0K | |
| R1404 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K (KV-20VM20 only) | | R1815 | 1-247-271-00 | RES,CARBON(SMALL) 20K | |
| R1405 | 1-247-830-11 | RES,CARBON(SMALL) 910 (KV-13VM20 only) | | R1816 | 1-249-437-11 | RES,CARBON(SMALL) 47K | |
| R1406 | 1-247-903-00 | RES,CARBON(SMALL) 1 0M | | | | | |
| R1407 | 1-247-903-00 | RES,CARBON(SMALL) 1 0M | | R1817 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| R1408 | 1-260-094-11 | RES,CARBON(SMALL) 390 | | R1818 | 1-249-429-11 | RES,CARBON(SMALL) 10K | |
| R1409 | 1-260-101-11 | RES,CARBON(SMALL) 1 5K (KV-20VM20 only) | | R1819 | 1-259-454-11 | RES,CARBON(SMALL) 12K | |
| | | | | R1820 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | |
| R1410 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K (KV-13VM20 only) | | R1821 | 1-249-422-11 | RES,CARBON(SMALL) 2 7K | |
| R1410 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K (KV-20VM20 only) | | | | | |
| R1411 | 1-215-891-11 | RES,METAL OXIDE 680 2W | | R1822 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K | |
| R1412 | 1-249-411-11 | RES,CARBON(SMALL) 330 | | R1823 | 1-249-429-11 | RES,CARBON(SMALL) 10K | |
| R1413 | 1-260-105-11 | RES,CARBON(SMALL) 3 3K | | R1824 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| R1414 | 1-259-036-11 | RES,CARBON(SMALL) 15 | | R1825 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| R1415 | 1-260-097-11 | RES,CARBON(SMALL) 680 | | R1829 | 1-249-427-11 | RES,CARBON(SMALL) 6 8K | |
| | | | | | | | |
| R1416 | 1-249-657-01 | RES,METAL OXIDE FILM 220 1/2W | | R1833 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| R1418 | 1-249-414-11 | RES,CARBON(SMALL) 560 | | R1834 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| R1419 | 1-249-417-11 | RES,CARBON(SMALL) 1.0K (KV-13VM20 only) | | R1835 | 1-249-432-11 | RES,CARBON(SMALL) 18K | |
| R1419 | 1-247-830-11 | RES,CARBON(SMALL) 910 (KV-20VM20 only) | | R1836 | 1-249-433-11 | RES,CARBON(SMALL) 22K | |
| R1420 | 1-249-441-11 | RES,CARBON(SMALL) 100K | | R1837 | 1-260-111-00 | RES,CARBON(SMALL) 10K | |
| R1421 | 1-249-377-11 | RES,CARBON(SMALL) 0 68 | | | | | |
| | | | | R1839 | 9-908-986-11 | RESISTOR 10M | |
| R1426 | 1-247-842-11 | RES,CARBON(SMALL) 3 0K (KV-13VM20 only) | | R1842 | 1-259-615-11 | RES,CARBON(SMALL) 330K | |
| R1426 | 1-249-429-11 | RES,CARBON(SMALL) 10K (KV-20VM20 only) | | VR1201 | 1-241-763-11 | RESISTOR RH0638CS3R B472 HORIZONTAL(TA) | |
| R1427 | 1-247-838-00 | RES,CARBON(SMALL) 2.0K | | VR1301 | 9-908-994-01 | RESISTOR RI10638CJ2R B221 HORIZONTAL(TA) | |
| R1434 | 1-249-438-11 | RES,CARBON(SMALL) 56K | | VR1401 | 1-241-760-11 | RESISTOR RH0638CN2R B331 HORIZONTAL(TA) | |
| R1435 | 1-247-881-00 | RES,CARBON(SMALL) 120K | | VR1402 | 9-933-001-01 | RES,VARIABLE (KV-20VM20 only) | |
| R1501 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | | | | |
| | | | | | | | |
| R1502 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | | | | |
| R1509 | 1-249-408-11 | RES,CARBON(SMALL) 180 | | | | | |
| R1510 | 1-249-836-11 | RES,CARBON(SMALL) 1 6K (KV-13VM20 only) | | | | | |
| R1510 | 9-909-870-01 | RES,CARBON(SMALL) 750 (KV-20VM20 only) | | | | | |
| R1511 | 1-249-836-11 | RES,CARBON(SMALL) 1 6K (KV-13VM20 only) | | | | | |
| R1511 | 9-909-870-01 | RES,CARBON(SMALL) 750 (KV-20VM20 only) | | SW1201 | 9-908-991-01 | SWITCH SVC | |
| R1512 | 1-249-836-11 | RES,CARBON(SMALL) 1 6K (KV-13VM20 only) | | SW1301 | 9-908-991-01 | SWITCH SVC P12T21 | |
| R1512 | 9-909-870-01 | RES,CARBON(SMALL) 750 (KV-20VM20 only) | | SW1501 | 9-908-992-01 | SWITCH PUSH SPH2(LOCK TYPE) | |
| | | | | | | | |

| REF NO | PART NO | DESCRIPTION | REMARK |
|-------------------------------------|--------------|---|--------|
| ---- | ----- | ----- | ----- |
| <TRANSISTOR> | | | |
| Q1901 | 8 729 766 82 | TRANSISTOR 2SC2668 O | |
| Q1902 | 8 729 266 82 | TRANSISTOR 2SC2668 O | |
| Q1903 | 8 729 266 82 | TRANSISTOR 2SC2668 O | |
| <RESISTOR> | | | |
| R1901 | 1 249 404 00 | RES CARBON(SMALL) 82 | |
| R1902 | 1 247 812 11 | RES CARBON(SMALL) 160 | |
| R1903 | 1 247 817 11 | RES CARBON(SMALL) 160 | |
| R1904 | 1 247 812 11 | RES CARBON(SMALL) 160 | |
| R1905 | 1 249 419 11 | RES CARBON(SMALL) 1 5K | |
| R1906 | 1 249 419 11 | RES CARBON(SMALL) 1 5K | |
| R1907 | 1 249 419 11 | RES CARBON(SMALL) 1 5K | |
| R1908 | 1 260 101 11 | RES CARBON(SMALL) 1 5K | |
| R1909 | 1 260 101 11 | RES CARBON(SMALL) 1 5K | |
| R1910 | 1 260 101 11 | RES CARBON(SMALL) 1 5K | |
| R1911 | 9 907 986 01 | RES METAL OXIDE FILM 12K 2W | |
| R1912 | 9 907 986 01 | RES METAL OXIDE FILM 12K 2W | |
| R1913 | 9 907 986 01 | RES METAL OXIDE FILM 12K 2W | |
| R1914 | 1 207 846 00 | RES CARBON(SMALL) 470K 1/2W (KV 13VM20 only) | |
| R1915 | 1 702 838 00 | RES CARBON(SMALL) 100K 1/2W (KV 13VM20 only) | |
| R1916 | 1 202 848 00 | RES CARBON(SMALL) 680K 1/2W (KV 13VM20 only) | |
| R1917 | 1 249 731 11 | RES CARBON(SMALL) 270K 1/2W (KV 13VM20 only) | |
| R1918 | 1 702 842 11 | RES CARBON(SMALL) 220K 1/2W | |
| R1919 | 1 249 405 11 | RES CARBON(SMALL) 100 | |
| VR1901 | 1 241 760 11 | RESISTOR RH0638CN2R B331HORIZONTAL(1A) | |
| VR1902 | 1 241 760 11 | RESISTOR RH0638CN2R B331HORIZONTAL(TA) | |
| VR1903 | 1 241 763 11 | RESISTOR RH0638CS3R B472HORIZONTAL(TA) | |
| VR1904 | 1 241 763 11 | RESISTOR RH0638CS3R B472HORIZONTAL(TA) | |
| VR1905 | 1 241 763 11 | RESISTOR RH0638CS3R B472HORIZONTAL(TA) | |
| VR1907 △ | 1 230 641 11 | RESISTOR RH022GDJ6J1AA(2 2M) (KV 13VM20 only) | |
| VR1908 △ | 1 230 641 11 | RESISTOR RH092GDJ6J1AA(2 2M) (KV 13VM20 only) | |
| <ACCESSORIES AND PACKING MATERIALS> | | | |
| A1 | 1 467 828 11 | TRANSMITTER | |
| | 9 903 826 01 | REMOCON BATTERY COVER | |
| A2 | 9 308 084 01 | MANUAL INSTRUCTION(KV 13/20VM20) US | |
| A2 | 9 908 079 01 | MANUAL INSTRUCTION(KV 13/20VM20) CANADA | |

15-2. VIDEO

NOTE

The components identified by shading and mark Δ are critical for safety
Replace only with part number specified

The components identified by shading and mark Δ are critical for safety
Replace only with part number specified

| REF NO | PART NO | DESCRIPTION | REMARK |
|--------|----------------|-------------------|--------|
| | * 9-908-510-01 | MA MOUNT COMPLETE | |
| | ***** | | |

<CAPACITOR>

| | | |
|------|--------------|---------------------------|
| C101 | 9-909-000-01 | CAP,ELECT 2200U 25V |
| C102 | 1-136-157-00 | CAP,CERAMIC 0 022MF 25V |
| C103 | 1-126-967-11 | CAP,ELECT 47M 16V |
| C107 | 1-126-941-11 | CAP,ELECT 470M 16V |
| C109 | 9-909-482-01 | CAP,ELECT 100U 25V |
| C110 | 1-104-665-11 | CAP,ELECT 100M 25V |
| C112 | 1-124-122-11 | CAP,ELECT 100M 50V |
| C201 | 1-106-385-00 | CAP PETP FILM 0 056U 100V |
| C202 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C203 | 1-102-129-00 | CAP,CERAMIC 0 01M 50V |
| C204 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C205 | 1-137-419-11 | CAP PETP FILM 0 033U 100V |
| C206 | 9-908-984-01 | CAP,ELECT 1 0U 50V |
| C207 | 1-126-964-11 | CAP,ELECT 10M 25V |
| C208 | 1-126-964-11 | CAP,ELECT 10M 25V |
| C209 | 1-126-963-11 | CAP,ELECT 4 7M 50V |
| C210 | 1-126-963-11 | CAP,ELECT 4 7M 50V |
| C211 | 1-126-595-11 | CAP,ELECT 0 47U 50V |
| C212 | 1-137-387-11 | CAP PETP FILM 0 001U 100V |
| C213 | 1-126-967-11 | CAP,ELECT 47M 16V |
| C214 | 1-162-294-31 | CAP,CERAMIC 1000P 50V |
| C215 | 1-126-966-11 | CAP,ELECT 33M 16V |
| C216 | 1-124-916-11 | CAP,ELECT 22M 16V |
| C217 | 9-909-007-01 | CAP,CERAMIC 68P 50V |
| C218 | 9-909-007-01 | CAP,CERAMIC 68P 50V |
| C219 | 1-162-286-31 | CAP,CERAMIC 220P 50V |
| C220 | 1-126-963-11 | CAP,ELECT 4 7M 50V |
| C221 | 1-126-963-11 | CAP,ELECT 4 7M 50V |
| C222 | 1-102-129-00 | CAP,ELECT 0 01M 50V |
| C224 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C225 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C226 | 1-126-959-11 | CAP,ELECT 0 47M 50V |
| C227 | 1-104-666-11 | CAP,ELECT 220U 16V |
| C229 | 1-102-129-00 | CAP,CERAMIC 0 01M 50V |
| C232 | 1-104-666-11 | CAP,ELECT 220U 16V |
| C250 | 9-909-014-01 | CAP,CERAMIC 1000P 50V |
| C301 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V |
| C302 | 1-162-201-11 | CAP,CERAMIC 12P 50V |
| C303 | 1-162-203-31 | CAP,CERAMIC 15P 50V |
| C304 | 1-102-978-00 | CAP CERAMIC 220P 50V |
| C305 | 1-162-285-31 | CAP,CERAMIC 180P 50V |
| C306 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C307 | 1-162-288-31 | CAP CERAMIC 330P 50V |
| C308 | 1-162-201-11 | CAP,CERAMIC 12P 50V |
| C309 | 1-162-213-31 | CAP,CERAMIC 39P 50V |
| C310 | 1-102-942-00 | CAP,CERAMIC 5P 50V |
| C311 | 1-126-964-11 | CAP,ELECT 10M 25V |
| C312 | 1-126-964-11 | CAP,ELECT 10M 25V |
| C313 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V |
| C314 | 1-137-420-11 | CAP PETP FILM 0 047U 100V |
| C315 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V |
| C316 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C317 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C318 | 1-137-150-11 | CAP PETP FILM 0 01U 100V |
| C319 | 1-126-964-11 | CAP,ELECT 10M 25V |
| C320 | 9-909-014-01 | CAP,CERAMIC 1000P 50V |
| C321 | 1-124-903-11 | CAP,ELECT 1 0M 50V |
| C322 | 1-161-055-11 | CAP PETP FILM 0 022M 50V |

| REF NO | PART NO | DESCRIPTION | REMARK |
|--------|--------------|----------------------------|--------|
| C323 | 1-124-903-11 | CAP,ELECT 1 0M 50V | |
| C324 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C325 | 1-137-420-11 | CAP PETP FILM 0 047U 100V | |
| C326 | 1-162-215-31 | CAP CERAMIC 47P 50V | |
| C327 | 1-162-209-31 | CAP CERAMIC 27P 50V | |
| C328 | 1-162-286-31 | CAP,CERAMIC 220P 50V | |
| C329 | 1-162-284-31 | CAP,CERAMIC 150P 50V | |
| C330 | 1-162-280-11 | CAP,CERAMIC 82P 50V | |
| C331 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C332 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C333 | 1-126-967-11 | CAP,ELECT 47M 16V | |
| C334 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C335 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C338 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C343 | 1-162-215-31 | CAP,CERAMIC 47P 50V | |
| C344 | 1-162-215-31 | CAP,CERAMIC 47P 50V | |
| C345 | 1-162-199-31 | CAP,CERAMIC 10P 50V | |
| C346 | 1-162-215-31 | CAP,CERAMIC 47P 50V | |
| C347 | 1-162-205-31 | CAP,CERAMIC 18P 50V | |
| C348 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C349 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | |
| C350 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C351 | 1-161-063-00 | CAP,CERAMIC 0 1M 50V | |
| C352 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C353 | 1-124-892-11 | CAP,ELECT 47M 6 3V | |
| C354 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | |
| C355 | 1-124-892-11 | CAP,ELECT 47M 6 3V | |
| C356 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C357 | 1-124-903-11 | CAP,ELECT 1 0M 50V | |
| C358 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C359 | 1-126-967-11 | CAP,ELECT 47M 16V | |
| C361 | 1-162-215-31 | CAP CERAMIC 47P 50V | |
| C362 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C363 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C364 | 1-126-967-11 | CAP,ELECT 47M 16V | |
| C365 | 1-136-157-00 | CAP,CERAMIC 0 022M 25V | |
| C366 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C367 | 1-104-665-11 | CAP,ELECT 100M 16V | |
| C369 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C370 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C371 | 1-126-966-11 | CAP,ELECT 33M 16V | |
| C372 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C373 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | |
| C374 | 1-161-063-00 | CAP,CERAMIC 0 1M 50V | |
| C376 | 1-161-063-00 | CAP,CERAMIC 0 1M 50V | |
| C381 | 1-161-063-00 | CAP,CERAMIC 0 1M 50V | |
| C390 | 1-162-288-11 | CAP,CERAMIC 330P 50V | |
| C402 | 1-126-967-11 | CAP,ELECT 47M 25V | |
| C403 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C404 | 1-126-963-11 | CAP,ELECT 4 7M 50V | |
| C405 | 1-137-150-11 | CAP PETP FILM 0 01U 100V | |
| C406 | 1-161-055-11 | CAP PETP FILM 0 022U 50V | |
| C407 | 1-130-287-11 | CAP PETP FILM 0 0039U 100V | |
| C408 | 1-126-964-11 | CAP,ELECT 10M 25V | |
| C410 | 1-124-463-00 | CAP,ELECT 0 1M 50V | |
| C411 | 1-130-277-11 | CAP PETP FILM 0 0015U 100V | |
| C412 | 1-124-463-00 | CAP,ELECT 0 01M 50V | |
| C413 | 1-126-963-11 | CAP,ELECT 4 7M 50V | |
| C414 | 1-124-463-00 | CAP,ELECT 0 1M 50V | |
| C415 | 1-137-150-11 | CAP PETP FILM 0 01U 100V | |
| C416 | 1-124-903-11 | CAP,ELECT 1 0M 50V | |
| C417 | 1-126-966-11 | CAP,ELECT 33M 16V | |
| C418 | 1-130-281-11 | CAP PETP FILM 0 002U 100V | |
| C419 | 1-137-150-11 | CAP PETP FILM 0 01U 100V | |

| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------|--------------|---------------------------|--------|--------|--------------|-----------------------|--------|
| C420 | 1-137-150-11 | CAP,PETP FILM 0 01U 100V | | C821 | 1-162-275-11 | CAP,CERAMIC 22P 50V | |
| C421 | 1-137-398-11 | CAP,PETP FILM 0 068U 100V | | C822 | 1-162-275-11 | CAP,CERAMIC 22P 50V | |
| C422 | 1-102-978-00 | CAP,CERAMIC 220P 50V | | C823 | 1-162-275-11 | CAP,CERAMIC 22P 50V | |
| C423 | 1-126-964-11 | CAP,ELECT 10M 25V | | C824 | 1-162-275-11 | CAP,CERAMIC 22P 50V | |
| C424 | 1-137-350-01 | CAP,PETP FILM 0 001U 100V | | C826 | 1-102-949-11 | CAP,CERAMIC 12P 50V | |
| C426 | 1-124-903-11 | CAP,ELECT 1 0M 50V | | C830 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C451 | 1-126-964-11 | CAP,ELECT 10M 25V | | C841 | 1-101-340-11 | CAP,CERAMIC 120F 50V | |
| C453 | 1-126-964-11 | CAP,ELECT 10M 25V | | C842 | 1-101-340-11 | CAP,CERAMIC 120F 50V | |
| C501 | 9-908-541-01 | CAP ELECT 0 047F-5 5V | | C843 | 1-104-665-11 | CAP,ELECT 100M 16V | |
| C503 | 1-126-967-11 | CAP,ELECT 47M 16V | | C844 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | |
| C504 | 1-126-967-11 | CAP,ELECT 47M 16V | | C845 | 1-124-903-11 | CAP,ELECT 1 0M 50V | |
| C505 | 1-126-967-11 | CAP,ELECT 47M 16V | | | | <DIODE> | |
| C506 | 1-126-967-11 | CAP,ELECT 47M 16V | | D101 | 8-719-911-11 | DIODE 1S1585 | |
| C507 | 1-126-967-11 | CAP,ELECT 47M 16V | | D103 | 8-719-911-11 | DIODE 1S1585 | |
| C508 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D104 | 8-719-911-11 | DIODE 1S1585 | |
| C509 | 9-908-984-01 | CAP,ELECT 1 0U 50V | | D105 | 8-719-200-02 | DIODE 10E-2 | |
| C510 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D106 | 8-719-200-02 | DIODE 10E-2 | |
| C511 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D201 | 8-719-911-11 | DIODE 1S1585 | |
| C512 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | | D202 | 8-719-911-11 | DIODE 1S1585 | |
| C513 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | | D204 | 8-719-911-11 | DIODE 1S1585 | |
| C516 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D205 | 8-719-911-11 | DIODE 1S1585 | |
| C517 | 1-126-964-11 | CAP,ELECT 10M 25V | | D209 | 8-719-911-11 | DIODE 1S1585 | |
| C518 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D210 | 8-719-911-11 | DIODE 1S1585 | |
| C519 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D301 | 8-719-911-11 | DIODE 1S1585 | |
| C520 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D302 | 8-719-911-11 | DIODE 1S1585 | |
| C521 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D303 | 8-719-911-11 | DIODE 1S1585 | |
| C522 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D304 | 8-719-911-11 | DIODE 1S1585 | |
| C524 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D305 | 8-719-911-11 | DIODE 1S1585 | |
| C525 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D306 | 8-719-911-11 | DIODE 1S1585 | |
| C526 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D401 | 8-719-911-11 | DIODE 1S1585 | |
| C527 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D410 | 8-719-911-11 | DIODE 1S1585 | |
| C528 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D501 | 8-719-200-02 | DIODE 10E-2 | |
| C529 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D502 | 8-719-911-11 | DIODE 1S1585 | |
| C530 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D503 | 8-719-200-02 | DIODE 10E-2 | |
| C532 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D504 | 8-719-911-11 | DIODE 1S1585 | |
| C533 | 1-162-207-31 | CAP CERAMIC 22P 50V | | D505 | 8-719-911-11 | DIODE 1S1585 | |
| C534 | 1-162-207-31 | CAP CERAMIC 22P 50V | | D701 | 8-719-911-11 | DIODE 1S1585 | |
| C536 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | D801 | 8-719-911-11 | DIODE 1S1585 | |
| C580 | 1-104-666-11 | CAP,ELECT 220U 16V | | D802 | 8-719-911-11 | DIODE 1S1585 | |
| C701 | 1-104-665-11 | CAP,ELECT 100M 16V | | ZD101 | 8-719-921-93 | DIODE MTZ15C | |
| C702 | 1-126-935-11 | CAP,ELECT 470U 10V | | ZD103 | 8-719-982-27 | DIODE MTZ-33C | |
| C703 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD401 | 8-719-109-89 | DIODE MTZ5,6B | |
| C704 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD402 | 8-719-109-89 | DIODE MTZ5,6B | |
| C705 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD501 | 8-719-921-67 | DIODE MTZ8 2B | |
| C706 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD502 | 8-719-109-89 | DIODE MTZ5,6B | |
| C707 | 1-126-967-11 | CAP,ELECT 47M 16V | | ZD503 | 8-719-921-88 | DIODE MTZ13B | |
| C708 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD504 | 8-719-921-88 | DIODE MTZ13B | |
| C709 | 1-126-967-11 | CAP,ELECT 47M 16V | | ZD505 | 8-719-921-88 | DIODE MTZ13B | |
| C710 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD506 | 8-719-921-88 | DIODE MTZ13B | |
| C711 | 1-126-935-11 | CAP,ELECT 470UF 16V | | ZD507 | 8-719-921-88 | DIODE MTZ13B | |
| C712 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD508 | 8-719-921-88 | DIODE MTZ13B | |
| C713 | 1-126-967-11 | CAP,ELECT 47M 16V | | ZD509 | 8-719-921-88 | DIODE MTZ13B | |
| C714 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD510 | 8-719-921-88 | DIODE MTZ13B | |
| C715 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD511 | 8-719-921-88 | DIODE MTZ13B | |
| C716 | 1-124-903-11 | CAP,ELECT 1 0M 50V | | ZD512 | 8-719-921-88 | DIODE MTZ13B | |
| C717 | 1-124-925-11 | CAP,ELECT 2 2M 50V | | ZD520 | 8-719-921-88 | DIODE MTZ13B | |
| C719 | 1-102-125-11 | CAP CERAMIC 4700P 50V | | ZD521 | 8-719-921-88 | DIODE MTZ13B | |
| C721 | 1-124-903-11 | CAP,ELECT 1.0M 50V | | ZD598 | 8-719-109-89 | DIODE MTZ5 6B | |
| C750 | 1-137-419-11 | CAP PETP FILM 0 033U 100V | | ZD599 | 8-719-109-89 | DIODE MTZ5 6B | |
| C751 | 1-162-201-11 | CAP,CERAMIC 12P 50V | | ZD701 | 8-719-109-89 | DIODE MTZ5 6B | |
| C802 | 1-126-964-11 | CAP,ELECT 10M 16V | | ZD705 | 8-719-109-89 | DIODE MTZ5 6B | |
| C803 | 9-909-014-01 | CAP,CERAMIC 1000P 50V | | ZD706 | 8-719-109-89 | DIODE MTZ5 6B | |
| C804 | 1-137-413-11 | CAP PETP FILM 0 003U 100V | | ZD710 | 8-719-921-89 | DIODE MTZ13C | |
| C805 | 1-137-417-11 | CAP PETP FILM 0 015U 100V | | ZD711 | 8-719-921-89 | DIODE MTZ13C | |
| C806 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD805 | 8-719-109-89 | DIODE MTZ5 6C | |
| C808 | 1-137-419-11 | CAP PETP FILM 0 033U 100V | | ZD806 | 8-719-109-89 | DIODE MTZ5 6C | |
| C809 | 9-908-984-01 | CAP,ELECT 1 0U 50V | | ZD807 | 8-719-109-89 | DIODE MTZ5 6C | |
| C810 | 1-124-925-11 | CAP,ELECT 2 2M 50V | | ZD808 | 8-719-109-89 | DIODE MTZ5 6C | |
| C811 | 1-104-665-11 | CAP,ELECT 100M 16V | | ZD809 | 8-719-109-89 | DIODE MTZ5 6C | |
| C812 | 1-162-306-11 | CAP,CERAMIC 0 01M 16V | | ZD810 | 8-719-109-89 | DIODE MTZ5 6C | |
| C814 | 1-102-973-11 | CAP,CERAMIC 100P 50V | | ZD811 | 8-719-109-89 | DIODE MTZ5 6C | |
| C815 | 1-124-903-11 | CAP,ELECT 1.0M 50V | | ZD812 | 8-719-109-89 | DIODE MTZ5 6C | |
| C816 | 1-102-947-11 | CAP,CERAMIC 10P 50V | | | | | |
| C818 | 1-162-207-31 | CAP CERAMIC 22P 50V | | | | | |
| C820 | 1-162-203-31 | CAP,CERAMIC 15P 50V | | | | | |

| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------------|--------------|------------------------|--------|------------|--------------|--------------------------|--------|
| <IC> | | | | | | | |
| IC101 | 8-759-982-13 | IC, RU7812 | | Q304 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | |
| IC102 | 8-759-982-13 | IC, RU7812 | | Q305 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC103 | 8-759-982-06 | IC, RC78006FA | | Q306 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC103 | 8-759-982-06 | IC, RU7806FA | | Q307 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | |
| IC201 | 9-908-524-01 | IC, HD49754NT | | Q308 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | |
| IC301 | 9-908-526-01 | IC, LA7184 | | Q310 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| IC302 | 1-809-389-11 | IC, LC7975 | | Q311 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | |
| IC401 | 9-908-529-01 | IC, LA7285 | | Q312 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | |
| IC501 | 9-909-486-01 | IC M38184MA | | Q313 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC502 | 9-908-535-01 | IC, X24C02 8D | | Q314 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| IC503 | 9-908-534-01 | IC, GL7445 | | Q401 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| IC504 | 8-759-947-59 | IC, PST-523H | | Q402 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC505 | 9-908-536-01 | IC, MC144110 | | Q403 | 9-909-490-01 | TRANSISTOR 2SD1207-T | |
| IC701 | 8-759-800-81 | IC, LA7016 | | Q404 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC702 | 8-759-800-81 | IC, LA7016 | | Q451 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| IC801 | 8-759-187-22 | IC, LC7458B-04 | | Q501 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC802 | 9-908-549-01 | IC, LA7945N 22SD | | Q502 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC803 | 9-909-006-01 | IC, M50554-236SP | | Q503 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| IC804 | 8-759-947-59 | IC, PST-523G | | Q701 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| | | | | Q702 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| <COIL> | | | | Q703 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| L301 | 1-410-678-31 | MICRO INDUCTOR 220MH | | Q704 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| L302 | 1-408-421-00 | MICRO INDUCTOR 100MH | | Q705 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| L304 | 1-410-673-31 | MICRO INDUCTOR 68MH | | Q706 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| L305 | 1-410-664-31 | MICRO INDUCTOR 12MH | | Q707 | 9-908-553-01 | TRANSISTOR KRC103M-TP | |
| L306 | 1-410-667-31 | MICRO INDUCTOR 22MH | | Q802 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| L307 | 1-410-675-31 | MICRO INDUCTOR 120MH | | Q803 | 9-908-981-01 | TRANSISTOR KTC3198-TP-Y | |
| L308 | 1-410-678-31 | MICRO INDUCTOR 220MH | | Q804 | 9-909-010-01 | TRANSISTOR KTC3198-TP-BL | |
| L313 | 1-410-645-31 | MICRO INDUCTOR 100MH | | <RESISTOR> | | | |
| L314 | 1-410-666-31 | MICRO INDUCTOR 18MH | | R021 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | |
| L315 | 1-410-668-11 | MICRO INDUCTOR 27MH | | R022 | 1-249-427-11 | RES,CARBON(SMALL) 6 8K | |
| L316 | 1-410-667-31 | MICRO INDUCTOR 22MH | | R023 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | |
| L317 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R024 | 1-249-430-11 | RES,CARBON(SMALL) 12K | |
| L319 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R101 | 1-249-412-11 | RES,CARBON(SMALL) 390 | |
| L350 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R102 | 1-249-412-11 | RES,CARBON(SMALL) 390 | |
| L390 | 9-909-008-01 | MICRO INDUCTOR 47MH | | R105 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | |
| L401 | 1-410-685-31 | MICRO INDUCTOR 820MH | | R106 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | |
| L402 | 1-410-676-31 | MICRO INDUCTOR 0 015H | | R107 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | |
| L404 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R108 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | |
| L501 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R110 | 1-249-424-11 | RES,CARBON(SMALL) 3 9K | |
| L503 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R111 | 1-249-424-11 | RES,CARBON(SMALL) 3 9K | |
| L504 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R201 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K | |
| L505 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R202 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | |
| L702 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R203 | 1-247-881-00 | RES,CARBON(SMALL) 120K | |
| L703 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R204 | 1-247-891-00 | RES,CARBON(SMALL) 330K | |
| L704 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R205 | 1-249-433-11 | RES,CARBON(SMALL) 22K | |
| L801 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R206 | 1-249-430-11 | RES,CARBON(SMALL) 12K | |
| L802 | 1-408-604-11 | MICRO INDUCTOR 12UH | | R207 | 1-247-899-11 | RES,CARBON(SMALL) 680K | |
| L803 | 9-908-982-01 | MICRO INDUCTOR 4 7MH | | R208 | 1-247-897-11 | RES,CARBON(SMALL) 560K | |
| L804 | 1-408-421-00 | MICRO INDUCTOR 100MH | | R209 | 1-247-399-11 | RES,CARBON(SMALL) 680K | |
| L880 | 9-909-008-01 | MICRO INDUCTOR 47MH | | R210 | 1-249-431-11 | RES,CARBON(SMALL) 15K | |
| <TRANSISTOR> | | | | R211 | 1-249-438-11 | RES,CARBON(SMALL) 56K | |
| Q101 | 9-908-999-01 | TRANSISTOR KTD1414 | | R212 | 1-249-441-11 | RES,CARBON(SMALL) 100K | |
| Q103 | 9-908-553-01 | TRANSISTOR KRC103M-TP | | R213 | 1-249-438-11 | RES,CARBON(SMALL) 56K | |
| Q104 | 8-729-803-86 | TRANSISTOR 2SD1207T | | R214 | 1-247-903-00 | RES,CARBON(SMALL) 1 0K | |
| Q105 | 8-729-803-86 | TRANSISTOR 2SD1207T | | R215 | 1-247-883-00 | RES,CARBON(SMALL) 150K | |
| Q106 | 9-908-553-01 | TRANSISTOR KRC103M-TP | | R216 | 1-249-440-11 | RES,CARBON(SMALL) 82K | |
| Q201 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | | R217 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | |
| Q202 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | | R218 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | |
| Q203 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | | R219 | 1-249-414-11 | RES,CARBON(SMALL) 560 | |
| Q204 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | | R220 | 1-249-414-11 | RES,CARBON(SMALL) 560 | |
| Q205 | 8-729-230-79 | TRANSISTOR 2SC2458-YGR | | R221 | 1-249-430-11 | RES,CARBON(SMALL) 12K | |
| Q302 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | | R222 | 1-249-414-11 | RES,CARBON(SMALL) 560 | |
| Q303 | 9-908-553-01 | TRANSISTOR KRC103M-TP | | R223 | 1-247-899-11 | RES,CARBON(SMALL) 680K | |
| | | | | R224 | 1-249-439-11 | RES,CARBON(SMALL) 68K | |
| | | | | R225 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | |
| | | | | R226 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | |
| | | | | R227 | 1-249-441-11 | RES,CARBON(SMALL) 100K | |
| | | | | R228 | 1-249-434-11 | RES,CARBON(SMALL) 27K | |
| | | | | R229 | 1-249-431-11 | RES,CARBON(SMALL) 15K | |
| | | | | R230 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | |
| | | | | R231 | 1-249-441-11 | RES,CARBON(SMALL) 100K | |
| | | | | R232 | 1-249-435-11 | RES,CARBON(SMALL) 33K | |

| REFNO | PART NO | DESCRIPTION | REMARK | REFNO | PART NO | DESCRIPTION | REMARK |
|-------|--------------|------------------------|--------|-------|--------------|----------------------|--------|
| R235 | 1-249-439-11 | RES,CARBON(SMALL) 68K | | R412 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R236 | 1-249-436-11 | RES,CARBON(SMALL) 39K | | R413 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R237 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | | R414 | 1-249-897-11 | RES CARBON FILM 560K | |
| R238 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | | R415 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R239 | 1-249-436-11 | RES,CARBON(SMALL) 39K | | R416 | 1-249-424-11 | RES CARBON FILM 3 9K | |
| R241 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | | R417 | 1-249-429-11 | RES CARBON FILM 10K | |
| R242 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R418 | 1-247-891-00 | RES CARBON FILM 330K | |
| R243 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R419 | 1-249-435-11 | RES CARBON FILM 33K | |
| R245 | 1-247-881-00 | RES,CARBON(SMALL) 120K | | R420 | 1-249-393-11 | RES CARBON FILM 10 | |
| R247 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R421 | 1-249-393-11 | RES CARBON FILM 10 | |
| R248 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R422 | 1-249-393-11 | RES CARBON FILM 10 | |
| R249 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R423 | 1-249-435-11 | RES CARBON FILM 33K | |
| R301 | 1-249-420-11 | RES,CARBON(SMALL) 1 8K | | R424 | 1-249-401-11 | RES CARBON FILM 47 | |
| R302 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K | | R425 | 1-249-429-11 | RES CARBON FILM 10K | |
| R303 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R426 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R304 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K | | R427 | 1-249-429-11 | RES CARBON FILM 10K | |
| R305 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R428 | 1-249-406-11 | RES CARBON FILM 120 | |
| R306 | 1-249-416-11 | RES,CARBON(SMALL) 820 | | R429 | 1-249-404-11 | RES CARBON FILM 82 | |
| R307 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | | R430 | 1-249-428-11 | RES CARBON FILM 8 2K | |
| R308 | 1-249-422-11 | RES,CARBON(SMALL) 2 7K | | R432 | 1-249-429-11 | RES CARBON FILM 10K | |
| R309 | 1-249-415-11 | RES,CARBON(SMALL) 680 | | R433 | 1-247-899-11 | RES CARBON FILM 680K | |
| R310 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R434 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R311 | 1-247-903-00 | RES,CARBON(SMALL) 1 0M | | R436 | 1-249-433-11 | RES CARBON FILM 22K | |
| R312 | 1-247-903-00 | RES,CARBON(SMALL) 1 0M | | R437 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R313 | 1-249-424-11 | RES,CARBON(SMALL) 3 9K | | R451 | 1-249-437-11 | RES CARBON FILM 47K | |
| R314 | 1-249-420-11 | RES,CARBON(SMALL) 1 8K | | R452 | 1-249-437-11 | RES CARBON FILM 47K | |
| R315 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R453 | 1-249-412-11 | RES CARBON FILM 390 | |
| R316 | 1-249-430-11 | RES,CARBON(SMALL) 12K | | R454 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R317 | 1-249-416-11 | RES,CARBON(SMALL) 320 | | R460 | 1-249-422-11 | RES CARBON FILM 2 7K | |
| R318 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | | R501 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R319 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R502 | 1-249-753-15 | RES CARBON FILM 4 7M | |
| R320 | 1-249-430-11 | RES,CARBON(SMALL) 12K | | R503 | 1-249-439-11 | RES CARBON FILM 68K | |
| R321 | 1-249-429-11 | RES,CARBON(SMALL) 10K | | R504 | 1-249-429-11 | RES CARBON FILM 10K | |
| R322 | 1-249-435-11 | RES,CARBON(SMALL) 33L | | R505 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R323 | 1-249-410-11 | RES,CARBON(SMALL) 270 | | R506 | 1-249-439-11 | RES CARBON FILM 68K | |
| R324 | 1-249-414-11 | RES,CARBON(SMALL) 560 | | R507 | 1-259-880-11 | RES CARBON FILM 2 2M | |
| R325 | 1-249-433-11 | RES,CARBON(SMALL) 22K | | R508 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R326 | 1-249-430-11 | RES,CARBON(SMALL) 12K | | R509 | 1-249-439-11 | RES CARBON FILM 68K | |
| R327 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R510 | 1-249-429-11 | RES CARBON FILM 10K | |
| R328 | 1-249-422-11 | RES,CARBON(SMALL) 2 7K | | R511 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R329 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R512 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R330 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R513 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R331 | 1-249-409-11 | RES,CARBON(SMALL) 220 | | R514 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R332 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | | R515 | 1-249-435-11 | RES CARBON FILM 33K | |
| R339 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R516 | 1-249-435-11 | RES CARBON FILM 33K | |
| R340 | 1-249-409-11 | RES,CARBON(SMALL) 220 | | R517 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R341 | 1-249-409-11 | RES,CARBON(SMALL) 220 | | R518 | 1-249-434-11 | RES CARBON FILM 27K | |
| R342 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R519 | 1-249-434-11 | RES CARBON FILM 27K | |
| R343 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R520 | 1-249-429-11 | RES CARBON FILM 10K | |
| R344 | 1-249-421-11 | RES,CARBON(SMALL) 2 2K | | R521 | 1-249-429-11 | RES CARBON FILM 10K | |
| R345 | 1-249-412-11 | RES,CARBON(SMALL) 390 | | R522 | 1-249-429-11 | RES CARBON FILM 10K | |
| R346 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R523 | 1-249-429-11 | RES CARBON FILM 10K | |
| R347 | 1-249-418-11 | RES,CARBON(SMALL) 1 2K | | R524 | 1-249-429-11 | RES CARBON FILM 10K | |
| R348 | 1-249-431-11 | RES,CARBON(SMALL) 15K | | R525 | 1-249-429-11 | RES CARBON FILM 10K | |
| R349 | 1-247-908-00 | RES,CARBON(SMALL) 1 0M | | R526 | 1-249-429-11 | RES CARBON FILM 10K | |
| R350 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R527 | 1-249-429-11 | RES CARBON FILM 10K | |
| R351 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R529 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R352 | 1-249-440-11 | RES,CARBON(SMALL) 82K | | R530 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R353 | 1-249-417-11 | RES,CARBON(SMALL) 1 0K | | R531 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R355 | 1-249-439-11 | RES,CARBON(SMALL) 68K | | R532 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R356 | 1-249-438-11 | RES,CARBON(SMALL) 56K | | R533 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R371 | 1-249-424-11 | RES,CARBON(SMALL) 3 9K | | R534 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R372 | 1-249-413-11 | RES,CARBON(SMALL) 470 | | R535 | 1-249-441-11 | RES CARBON FILM 100K | |
| R380 | 1-249-423-11 | RES,CARBON(SMALL) 3 3K | | R536 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R381 | 1-249-428-11 | RES,CARBON(SMALL) 8 2K | | R537 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R382 | 1-249-419-11 | RES,CARBON(SMALL) 1 5K | | R538 | 1-249-441-11 | RES CARBON FILM 100K | |
| R401 | 1-249-411-11 | RES,CARBON(SMALL) 330 | | R539 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R403 | 1-249-416-11 | RES,CARBON(SMALL) 820 | | R540 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R404 | 1-249-410-11 | RES,CARBON(SMALL) 270 | | R541 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R405 | 1-249-426-11 | RES,CARBON(SMALL) 5 6K | | R542 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R406 | 1-249-425-11 | RES,CARBON(SMALL) 4 7K | | R543 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R407 | 1-249-435-11 | RES,CARBON(SMALL) 33K | | R546 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R408 | 1-249-430-11 | RES CARBON FILM 12K | | R552 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R409 | 1-249-436-11 | RES CARBON FILM 39K | | R555 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R410 | 1-249-436-11 | RES CARBON FILM 39K | | R556 | 1-249-425-11 | RES CARBON FILM 4 7K | |
| R411 | 1-249-439-11 | RES CARBON FILM 68K | | R557 | 1-249-414-11 | RES CARBON FILM 560 | |

- 152 -

| REF NO | PART NO | DESCRIPTION | REMARK |
|---------------------------|--------------|------------------------|--------|
| <IC> | | | |
| IC601 | 8-759-048-53 | IC,LA7376 | |
| <COIL> | | | |
| L601 | 1-410-669-31 | INDUCTOR 33MH | |
| L602 | 1-408-418-00 | INDUCTOR 56MH | |
| L603 | 1-410-663-31 | INDUCTOR 10MH | |
| L604 | 1-408-421-00 | INDUCTOR 100MH | |
| L605 | 1-410-677-31 | INDUCTOR 180MH | |
| L606 | 1-408-421-00 | INDUCTOR 100MH | |
| L610 | 1-412-544-11 | INDUCTOR 390MH | |
| L611 | 1-410-682-31 | INDUCTOR 470MH | |
| L612 | 9-909-489-01 | INDUCTOR 15MH | |
| <TRANSISTOR> | | | |
| Q601 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q602 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| Q603 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| Q604 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| Q605 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| Q630 | 8-729-230-79 | TRANSISTOR 2SC1815-GR | |
| <RESISTOR> | | | |
| R601 | 1-249-426-11 | RES CARBON FILM 5 6K | |
| R602 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R603 | 1-249-433-11 | RES CARBON FILM 22K | |
| R604 | 1-249-424-11 | RES CARBON FILM 3 9K | |
| R605 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R606 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R607 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R608 | 1-249-412-11 | RES CARBON FILM 390 | |
| R609 | 1-249-412-11 | RES CARBON FILM 390 | |
| R610 | 1-249-418-11 | RES CARBON FILM 1 2K | |
| R611 | 1-249-426-11 | RES CARBON FILM 5 6K | |
| R612 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R613 | 1-249-415-11 | RES CARBON FILM 680 | |
| R614 | 1-249-416-11 | RES CARBON FILM 820 | |
| R615 | 1-249-411-11 | RES CARBON FILM 330 | |
| R616 | 1-249-418-11 | RES CARBON FILM 1 2K | |
| R617 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R618 | 1-249-435-11 | RES CARBON FILM 33K | |
| R619 | 1-249-429-11 | RES CARBON FILM 10K | |
| R620 | 1-249-424-11 | RES CARBON FILM 3 9K | |
| R621 | 1-249-435-11 | RES CARBON FILM 33K | |
| R623 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R624 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R625 | 1-249-419-11 | RES CARBON FILM 1 5K | |
| R630 | 1-249-421-11 | RES CARBON FILM 2 2K | |
| R631 | 1-249-424-11 | RES CARBON FILM 3 9K | |
| R632 | 1-249-417-11 | RES CARBON FILM 1 0K | |
| R633 | 1-249-416-11 | RES CARBON FILM 820 | |

* 9-908-670-01 MF MOUNT COMPLETE

<CAPACITOR>

| | | |
|------|--------------|-----------------------|
| C901 | 1-104-665-11 | CAP,ELECT 100M 10V |
| C903 | 9-909-014-01 | CAP,CERAMIC 1000P 50V |
| C904 | 9-909-014-01 | CAP,CERAMIC 1000P 50V |

| REF NO | PART NO | DESCRIPTION | REMARK |
|------------------------------|--------------|-------------------------------|--------|
| <DIODE> | | | |
| D902 | 8-719-911-11 | DIODE 1S1585 | |
| D903 | 8-719-911-11 | DIODE 1S1585 | |
| LD901 | 9-909-488-01 | DIODE,LED S03511 ORANGE | |
| LD902 | 9-909-885-01 | DIODE,LED S03511 RED | |
| LD903 | 9-909-885-01 | DIODE,LED S03511 RED | |
| LD904 | 9-909-885-01 | DIODE,LED S03511 RED | |
| LD905 | 9-909-488-01 | DIODE,LED S03511 ORANGE | |
| LD906 | 9-909-488-01 | DIODE,LED S03511 ORANGE | |
| ZD901 | 8-719-109-89 | DIODE MTZ5 6C | |
| <RESISTOR> | | | |
| R901 | 1-249-413-11 | RES CARBON FILM 470 | |
| R902 | 1-249-413-11 | RES CARBON FILM 470 | |
| R903 | 1-249-413-11 | RES CARBON FILM 470 | |
| R904 | 1-249-413-11 | RES CARBON FILM 470 | |
| R905 | 1-249-413-11 | RES CARBON FILM 470 | |
| R906 | 1-249-413-11 | RES CARBON FILM 470 | |
| R907 | 1-249-432-11 | RES CARBON FILM 18K | |
| R908 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R909 | 1-249-423-11 | RES CARBON FILM 3 3K | |
| R910 | 1-249-420-11 | RES CARBON FILM 1 8K | |
| R911 | 1-249-418-11 | RES CARBON FILM 1 2K | |
| R912 | 1-249-416-11 | RES CARBON FILM 820 | |
| R913 | 1-249-415-11 | RES CARBON FILM 680 | |
| R914 | 1-249-432-11 | RES CARBON FILM 18K | |
| R915 | 1-249-427-11 | RES CARBON FILM 6 8K | |
| R916 | 1-249-423-11 | RES CARBON FILM 3 3K | |
| R917 | 1-249-420-11 | RES CARBON FILM 1 8K | |
| R918 | 1-249-418-11 | RES CARBON FILM 1 2K | |
| R919 | 1-249-416-11 | RES CARBON FILM 820 | |
| R920 | 1-249-415-11 | RES CARBON FILM 680 | |
| R921 | 1-249-429-11 | RES CARBON FILM 10K | |
| <SWITCH> | | | |
| SW901 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW902 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW903 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW904 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW905 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW906 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW907 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW908 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW909 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW910 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW911 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW912 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW913 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW914 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW915 | 9-909-017-01 | SWITCH SKHV10910A | |
| SW916 | 9-909-017-01 | SWITCH SKHV10910A | |
| <MISCELLANEOUS> | | | |
| RC901 | 9-909-886-01 | IC R/C RECE(3276)H-11 5MM 40K | |

* 9-909-874-01 SW MOUNT COMPLETE

<CAPACITOR>

| | | |
|------|--------------|------------------------|
| C771 | 1-126-967-11 | CAP,ELECT 47MF/16V |
| C772 | 1-162-306-11 | CAP,CERAMIC 0 01MF/16V |
| C773 | 1-162-306-11 | CAP,CERAMIC 0 01MF/16V |
| C774 | 1-126-967-11 | CAP,ELECT 47MF/16V |
| C775 | 1-162-306-11 | CAP,CERAMIC 0 01MF/16V |
| C776 | 1-126-967-11 | CAP,ELECT 47MF/16V |
| C777 | 1-162-306-11 | CAP,CERAMIC 0 01MF/16V |

| REF NO | PART NO | DESCRIPTION | REMARK | REF NO | PART NO | DESCRIPTION | REMARK |
|--------------------------|--------------|-----------------------------------|--------|--------|---------|-------------|--------|
| C778 | 1-126-967-11 | CAP,ELECT 47MF/16V | | | | | |
| C779 | 1-126-964-11 | CAP,ELECT 10MF/16V | | | | | |
| C780 | 1-126-964-11 | CAP,ELECT 10MF/16V | | | | | |
| C781 | 1-126-964-11 | CAP,ELECT 10MF/16V | | | | | |
| C789 | 1-126-967-11 | CAP,ELECT 47MF/16V | | | | | |
| <DIODE> | | | | | | | |
| L771 | 1-408-421-00 | MICRO INDUCTOR 100MH | | | | | |
| L772 | 1-408-421-00 | MICRO INDUCTOR 100MH | | | | | |
| L773 | 1-408-421-00 | MICRO INDUCTOR 100MH | | | | | |
| L774 | 1-408-421-00 | MICRO INDUCTOR 100MH | | | | | |
| ZD771 | 8-719-921-89 | DIODE MTZ13C | | | | | |
| ZD772 | 8-719-921-89 | DIODE MTZ13C | | | | | |
| ZD773 | 8-719-921-89 | DIODE MTZ13C | | | | | |
| ZD774 | 8-719-921-89 | DIODE MTZ13C | | | | | |
| <CONNECTOR> | | | | | | | |
| CN770 | 9-909-875-01 | CONNECTOR,WAFER FAU0640-08 | | | | | |
| CN771 | 9-909-875-01 | CONNECTOR,WAFER FAU0640-08 | | | | | |
| <IC> | | | | | | | |
| IC771 | 9-933-738-01 | IC,MC14577CF 8D | | | | | |
| IC772 | 9-908-544-01 | IC,GL3816 | | | | | |
| IC773 | 9-908-544-01 | IC,GL3816 | | | | | |
| IC774 | 9-908-544-01 | IC,GL3816 | | | | | |
| <RESISTOR> | | | | | | | |
| R771 | 0RD1001F608 | 1-249-417-11 RES,CARBON(SMALL) 1K | | | | | |
| R772 | 0RD1001F608 | 1-249-417-11 RES,CARBON(SMALL) 1K | | | | | |

MEMO

